
OKIDATA® Service Manual

Pacemark 3410 Dot Matrix Printer

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Chapter 0 About This Manual

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1.1 OVERVIEW

1.1.01 General Information

The Pacemark 3410 is a high speed, dot matrix printer, which utilizes a 9 pin printhead.

The printer is capable of emulating the IBM Proprinter or the Epson FX printers.

The Pacemark 3410 comes standard with both an RS232-C Serial Interface and a Centronics Parallel Interface. Also standard is the bottom push tractor feed unit.

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Chapter 1 Product Specifications

1.2 PHYSICAL SPECIFICATIONS

1.2.01 Printer Dimensions

NOTE:

Dimensions include the bottom feed unit.

Width: 25.5 inches (54.0 centimeters)

Depth: 19 inches (48.3 centimeters)

Height: 15 inches (20.3 centimeters)

1.2.02 Printer Weight

63 pounds (25.4 kilograms)

United Parcel Service (UPS) shippable

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1.3 POWER REQUIREMENTS

1.3.01 Input Power

Input Voltage

120 VAC +5.5%, -15%

220/240 +10%, -10%

Frequency

50/60 hz. +/-2%

1.3.02 Power Consumption

Operating: 75 W

Idle: 30 W

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Chapter 1 Product Specifications

1.4 ENVIRONMENTAL CONDITIONS

1.4.01 Acoustic Rating

58.5 dBa

1.4.02 Altitude

10,000 feet (3,048 meters)

1.4.03 Ambient Temperature and Relative Humidity

In Operation

41 to 95 degrees Fahrenheit (5 to 35 degrees Celsius)

@ 20% - 80% Relative Humidity

In Storage

14 to 122 degrees Fahrenheit (-10 to 50 degrees Celsius)

@ 5% - 95% Relative Humidity

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1.5 AGENCY APPROVALS

1.5.01 Listings

North America

FCC Class B

UL 478 (Office Machines and Business Equipment)

CSA 22.2 (220)

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1.6 OPERATIONAL SPECIFICATIONS**1.6.01 Character Matrix Sizes**

Print Mode	Horizontal	Vertical
Near Letter Quality	24	17
Utility	12	9
High Speed Draft	9	9

1.6.02 Characters Per Line

136 Characters @ 10 cpi

163 Characters @ 12 cpi

204 Characters @ 15 cpi

233 Characters @ 17.1 cpi

272 Characters @ 20 cpi

1.6.03 Character Pitches

10, 12, 15, 17.1, 20

1.6.04 Character Sets

Standard ASCII

Epson Character Set I

Epson Character Set II

IBM Character Set I

IBM Character Set II

IBM ALL (Proprinter) Character Set

Foreign Language Substitution (International Characters)

Line Graphics

Code Pages: 850, 863

1.6.05 Emulations**NOTE:**

The Plug-in Chip Set for Microline/Pacemark Emulation is installed by a technician.

Resident

Epson FX-1050

IBM Proprinter III

Optional Plug-in Chip Set

Microline/Pacemark

1.6.06 Fonts

Standard

Near Letter Quality

Courier

Gothic

Proportional

Draft

Utility

High Speed Draft

Custom Characters

Barcode

Code 128 (ABC)

Code 3 of 9

EAN 8

EAN 13

Interleaved 2 of 5

POSTNET

UPC-A

UPC-E

1.6.07 Front Panel Switches

Select	Paper Park
Menu Mode	Pitch Selection
Line Feed	Print Quality Selection
Form Feed	Tear
Top of Form	Micro Feed Up / Down

1.6.08 Graphics Resolution

Maximum: 240 x 216 dots per inch (dpi)

1.6.09 Interface Methods

Standard

Centronics Parallel Interface

RS232-C Serial Interface (19.2 KB)

Optional

Twin-ax or Co-ax

Available from a third party vendor. Call 1-800-OKIDATA [1-800-654-3282] for more information.

1.6.10 Line Feed Increments

1/6" (Selected through the Menu)

1/8" (Selected through the Menu)

n/72"

n/144"

n/216"

1.6.11 Line Feed Time

10.0 Inches Per Second (IPS) slew rate (when Printhead Gap Lever is set at 1 or 2)

6 IPS slew rate (when Printhead Gap Lever is set at 3 or 4)

5 IPS slew rate (when Printhead Gap Lever is set at 5 through 9)

1.6.12 Menu Mode

Print: Prints the entire menu.

Group: Selects Group Function

Item: Selects Item

Set: Selects Item Value

Exit: Exits Menu Mode, Enters Select

1.6.13 Paper Feed Methods

Built-in Push Tractor (Bottom)

Built-in Push Tractor (Rear)

Friction Feed (Top)

Bottom Push Tractor Feed Unit

Optional Pull Tractor (Bottom / Rear)

Optional Cut Sheet Feeders (Single and Dual Bin)

1.6.14 Paper Feed Paths

Bottom Feed

Rear Feed

Top Feed

Special Features

Paper Park

Automatic Paper Loading

Forms Tear Off

1.6.15 Paper Loading

Auto Bail Arm for Auto Loading

1.6.16 Paper Out Detection

Distance from end of paper

Rear Feed: 2.30 inches (58.42 mm)

Bottom Feed: .94 inches (23.88 mm)

Cut Sheet: .93 inches (23.62 mm)

1.6.17 Paper Tear Capabilities

Form Tear-Zero Tear

Metal Tear Bar

1.6.18 Print Method

Printhead Type

General Information

Impact, Dot Matrix

Staggered, 9 pin, stored energy printhead

0.36 mm diameter pins

Installed by Service Technician

The Printhead Gap Adjustment must be performed when the printhead is replaced.

Overheat Protection

When the printhead temperature reaches 115 degrees Celsius, the printer stops bi-directional printing. Uni-directional printing continues.

If the temperature continues to rise (125° Celsius), printing stops.

Printing will resume when the printhead temperature drops below 115 degrees Celsius.

1.6.19 Print Modes

Near Letter Quality (NLQ)

Utility

High Speed Draft

1.6.20 Print Speeds

Pitch	High Speed Draft	Utility	Near Letter Quality
10 cpi	550 cps	417 cps	104 cps
12 cpi	550 cps	417 cps	104 cps
15 cpi	550 cps	417 cps	104 cps
17.1 cpi	550 cps	417 cps	104 cps
20 cpi	550 cps	417 cps	104 cps

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1.7 PAPER SPECIFICATIONS

1.7.01 Types

Card Stock

Weight: 120 lbs. (450 g/m²) Maximum

Width: 5 to 14 inches (12.7 to 35.6 centimeters)

Length: 3 to 17 inches (7.62 to 43.18 centimeters)

Thickness: .02 inches (0.5 millimeters)

Paper Feed Path: Bottom

Head Gap Lever Setting: 8 - 9

Continuous Form

Weight:

Single Part 12 - 24 lb. (45 to 90 g/m²)

Multi-Part, Carbonless 9 - 11 lb. (35 to 40 g/m²)

Multi-Part, Interleaf Paper 10 - 12 lb. (38 to 45 g/m²) Carbon 9 lb. (35 g/m²)

Width: 3 to 16 inches (76.2 to 406.4 millimeters)

Length: 3 to 17 inches (7.62 to 43.18 centimeters)

Thickness: 0.014 inches (0.36 millimeters) Rear Feed 0.02 inches (0.5 millimeters) Bottom Feed

Paper Feed Path: Rear or Bottom

Head Gap Lever Setting: 1 Single Part 12 - 15 lb. (45 to 56 g/m²)

1 - 2 Single Part 20 - 24 lb. (75 to 90 g/m²)

2 - 3 Two Part

3 - 4 Three Part

5 Four Part

6 Five Part

7 Six Part

Cut Sheet

Weight: 12 to 24 lbs. (45 to 90 g/m²)

Width: 7.2 to 14.3 inches (18.3 to 36.3 centimeters)

Length: 3 to 17 inches (7.62 to 43.18 centimeters)

Thickness: 0.014 inches (0.325 millimeters) Maximum

Paper Feed Path: Top

Head Gap Lever Setting: 1 12 - 15 lb. (45 to 56 g/m²)

1 - 2 20 - 24 lb. (75 to 90 g/m²)

Envelopes

Weight: 24 lbs. (90 g/m²) Maximum

Size:

Single Feed

Minimum: 6.5 x 3.6 inches (16.5 x 9.1 centimeters)

Maximum: 9.5 x 4.1 inches (24.1 x 10.4 centimeters)

Continuous

Non-overlap type

Thickness: .014 inches (.325 millimeters) Maximum

Paper Feed Path: Bottom

Head Gap Lever Setting: 5 - 9

Labels

Weight: N/A

Width: 3 to 16 inches (7.62 to 40.64 centimeters)

Length: 3 to 17 inches (7.62 to 43.18 centimeters)

Thickness: .011 inches (0.28 mm) Maximum (including backing)

Paper Feed Path: Bottom

Head Gap Lever Setting: 3 - 4

Transparency

NOTE:

Roller marks may mar the transparency under high temperature / high humidity conditions.

Weight: 12 to 24 lbs. (45 to 90 g/m²)

Width: 7.2 to 14.3 inches (18.3 to 36.3 centimeters)

Length: 3 to 17 inches (7.62 to 43.18 centimeters)

Thickness: 0.14 inches (0.36 millimeters)

Paper Feed Path: Top

Head Gap Lever Setting: 12 - 15 lb.

1 - 2 20 - 24 lb.

1.7.02 Length

NOTE:

The recommended length is specific to paper type.

Rear Feed

Minimum 3 inches (7.62 centimeters)

Maximum 17 inches (43.18 centimeters)

Bottom Feed

Minimum 3 inches (7.62 centimeters)

Maximum 17 inches (43.18 centimeters)

Top Feed

Minimum 3 inches (7.62 centimeters)

Maximum 17 inches (43.18 centimeters)

1.7.03 Number of Copies

Original + 5 Interleaf

Original + 7 Carbonless

Original + 3 Cut Sheet (top edge must be glued tight)

1.7.04 Thickness

0.014 inches / 0.36 mm Maximum Thickness, Rear Feed

0.020 inches / 0.50 mm Maximum Thickness, Bottom Feed

1.7.05 Weight

NOTE:

The recommended weight is specific to paper type.

Minimum: 9 lb. (35 g/m²)

Maximum: 24 lb. (90 g/m²)

1.7.06 Width

NOTE:

The recommended width is specific to paper type.

Minimum: 3 inches

Maximum: 16 inches

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1.8 MEMORY SPECIFICATIONS

1.8.01 EEPROM

Internal Control, Menu = 256 bits

1.8.02 RAM

Total RAM = 64 Kbytes

Print Buffer = 28 Kbytes

DLL Buffer = 0 to 31 Kbytes

1.8.03 ROM

Resident: Program ROM = 256 Kbytes

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1.9 CONSUMABLES

1.9.01 Ribbon

Black Cartridge

Type: Nylon Fabric

Ribbon Life: Approximately 7.5 million characters

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Chapter 1 Product Specifications

1.10 OPTIONS

1.10.01 Cut Sheet Feeders

CSF 3001 Single Bin

and

CSF 3002 Dual Bin

14 inches wide

User installable

Sheet Capacity

170 sheets of 16 lb.

100 sheets 24 lb.

Paper Width

7.2 to 8.5 inches (18.3 to 21.6 centimeters)

Paper Length

10.1 to 14 inches (25.7 to 35.6 centimeters)

1.10.02 Pull Tractor with Acoustic Cover

Use with bottom feed for continuous forms, labels, and / or invoices.

1.10.03 Microline/Pacemark Emulation Chip Set

Technician installable

1.10.04 Printer Stands

Available through a Third Party Vendor.

For more information, please call

800-749-2258 (Pacemark ONLY)

800-827-2672 (all printers)

1.10.05 Twin-ax / Co-ax

Available through a Third Party Vendor.

For more information, please call 508-777-7957.



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Chapter 1 Product Specifications

1.11 RELIABILITY

1.11.01 Mean Time Before Failure (MTBF)

Approximately 8,000 hours @ 25% Duty Cycle, 35% Page Density

Approximately 2,000 hours @ 100% Duty Cycle

1.11.02 Mean Time To Repair (MTTR)

Approximately 15 minutes @ major sub-assembly level

1.11.03 Printer Life

Approximately 16,000 Hours @ 25% Duty Cycle, 35% Page Density

1.11.04 Printhead Life

Approximately 200,000,000 characters (average)

@ 10 cpi Draft Mode @ 25% Duty Cycle, 35% Page Density

1.11.05 Ribbon Life

Approximately 7.5 million characters

1.11.06 Warranty (Limited)

One year parts, labor, printhead

1.11.07 Service

90 days, on-site



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Chapter 2 Principles of Operation

2.1 ELECTRICAL OPERATION

2.1.01 General Information

The main logic board consists of the microprocessor, its peripheral LSI circuits, ROM, DRAM and the drive circuits. The voltages for the main logic board are supplied by the power supply unit. The voltages for the various electrical components (motors, sensors, etc.) are distributed from the main logic board.

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Chapter 2 Principles of Operation

2.1.02 Microprocessor (MPU) and Peripheral Circuits

Microprocessor

Q3: M67X640V1

The MicroProcessor Unit (MPU) is the nucleus of the control circuit. Various peripheral circuits operate under program control of this microprocessor. The MPU (Q3) controls all aspects of printer operation.

Program ROM for the MPU

Q4: 27C202K

This 2Mbit Read Only Memory (ROM) contains the control program for the printer. The MPU operates under program control.

This ROM also stores the resident character fonts.

DRAM

Q10 and Q11

The Dynamic Random Access Memory (RAM) chips, each consisting of 64 K x 4 bits, are used as the Command Buffer, Receive Buffer and Print Buffer.

The total buffer size is 64 K x 8 bits. The RAM speed is 120 ns.

EEPROM

Q14: 93C06N

This 256-bit serial Electrically Erasable and Programmable Read Only Memory (EEPROM) stores the menu data and initial settings for the LSI circuits.

Interface/Motor Control LSI

Q5: B562 13497

This LSI controls the following functions listed below.

Space Motor Enable / Speed Control

To obtain the carriage speed instructed by the microprocessor, Q5 uses the signals SP - Phase A and SP - Phase B, derived from space motor movement to generate the pulse width timing and overdrive time.

Line Feed Motor Phasing Control

To turn the line feed motor in the proper direction, this LSI sends motor drive signals (properly phased) to the line feed driver (TRA4).

Bail Motor Phasing Control

To turn the bail motor in the proper direction, this LSI sends motor drive signals (properly phased) to the bail driver (TRA3).

Dot ON Timing signal generation

Q5 uses the signals SP - Phase A and SP - Phase B, derived from space motor movement, to produce the signal IPT. This signal (IPT) is used to enable the print wires at the desired carriage position.

Printhead / Bottom Tractor Feed Control LSI

Q2: B563 12597

This LSI enables the printhead drivers and is the interface between the bottom tractor feed unit (BTFD PCB) and the MPU.

The functions of this LSI are described below.

Printhead Drive Control

Printhead drive correction modifies the drive time under the following circumstances:

Drive time correction for drive voltage fluctuations

Drive time correction for head gap setting.

Bottom tractor feed unit control

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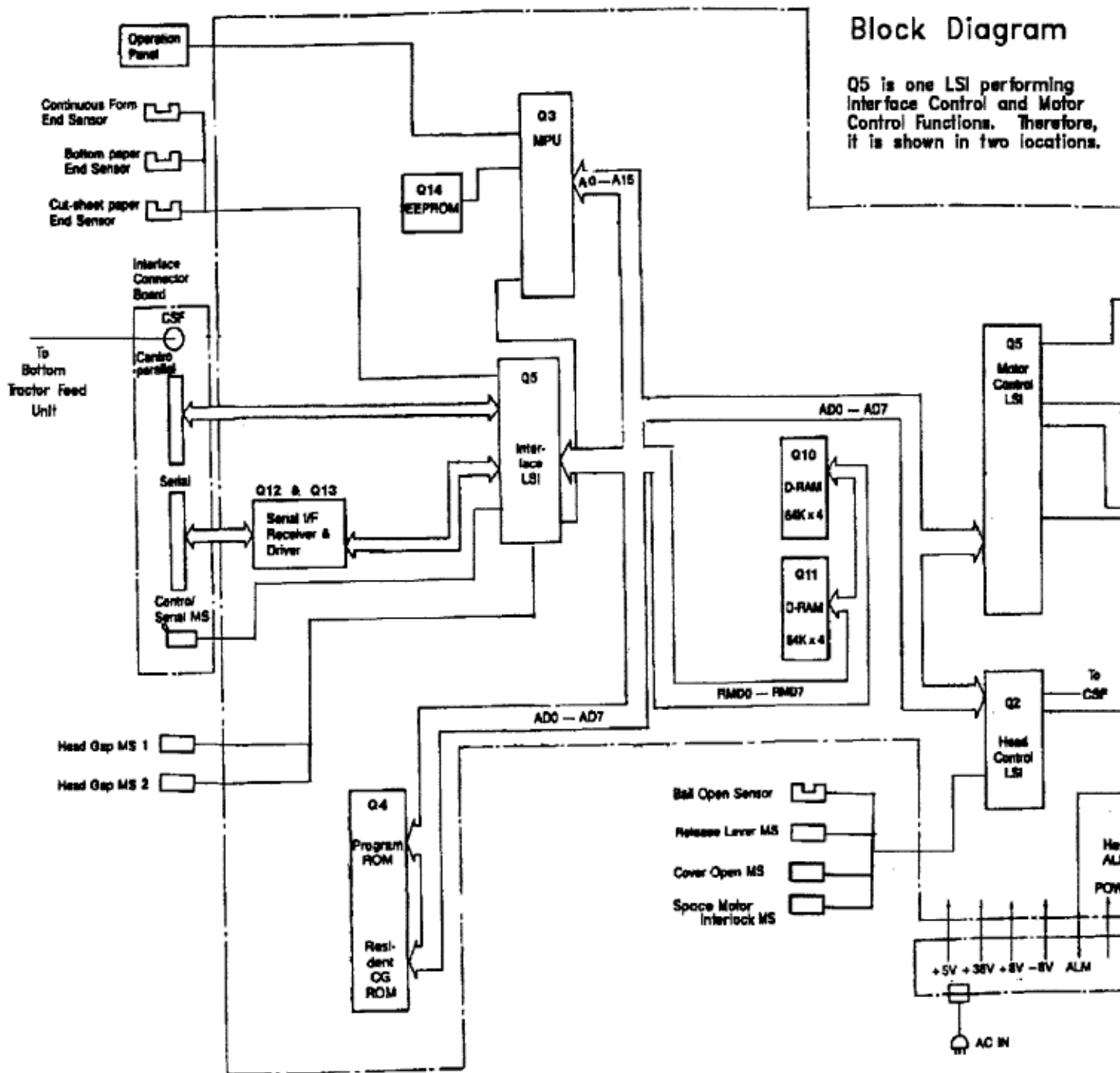
2.1.03 Initialization

The printer is initialized whenever it is powered ON or when the I-PRIME signal is received from the host at the parallel interface.

The initialization process is performed as listed below.

1. The reset circuit sends the RST-P signal to the MPU and LSIs.
2. ROM program execution starts with the mode setting of Q2 and Q5.
3. ROM and RAM are checked for errors.
4. RAM is initialized.
5. Bail and carriage homing is performed.
6. The interface signals (output level of ACK, BUSY, etc.) are set.
7. The SELECT lamp is turned ON.
8. The printer signals the host computer that it is ready to receive data.

Block Diagram





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Chapter 2 Principles of Operation

2.1.04 Interface Control

The printer is capable of serial or parallel operation. The desired interface method is selected by sliding the interface cover to expose the desired connector. When this is done, the interface select switch is turned ON or OFF to inform the Interface/Motor Control LSI (Q5: B562 13497) of the selected interface.

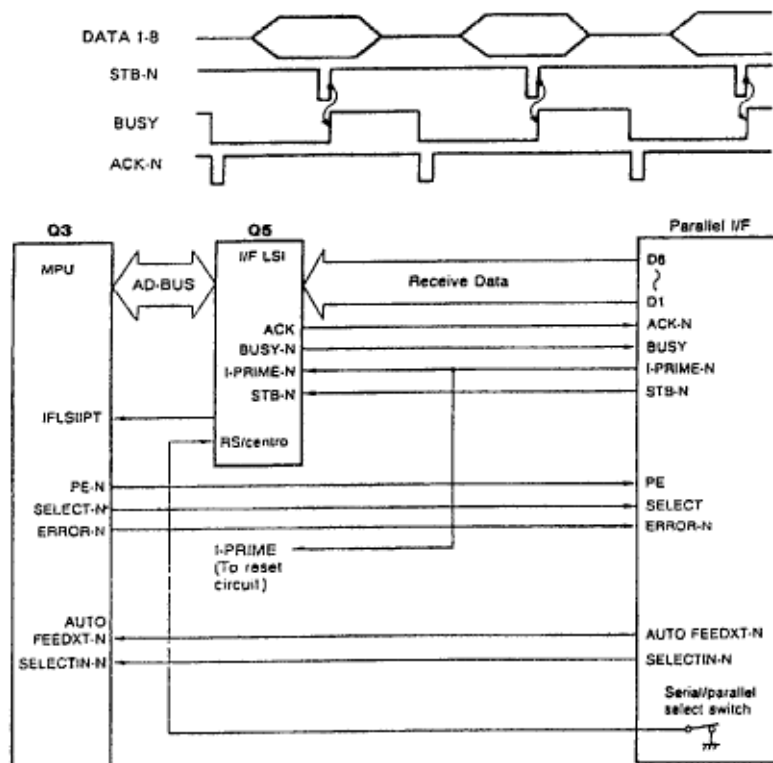
Parallel Interface

When the interface select switch is turned OFF, the parallel interface is selected and Q5 is in the parallel interface mode.

The data from the interface is received through connector (CN-1) and Q5 latches this data in sync with the STB signal.

The BUSY signal is turned ON as the data is processed. When processing is completed, the BUSY signal is turned OFF and an ACK signal is sent to the host to request more data.

The BUSY signal is also turned ON when the printer is not able to receive data (the Print Buffer is full, the printer is deselected or an error condition exists).

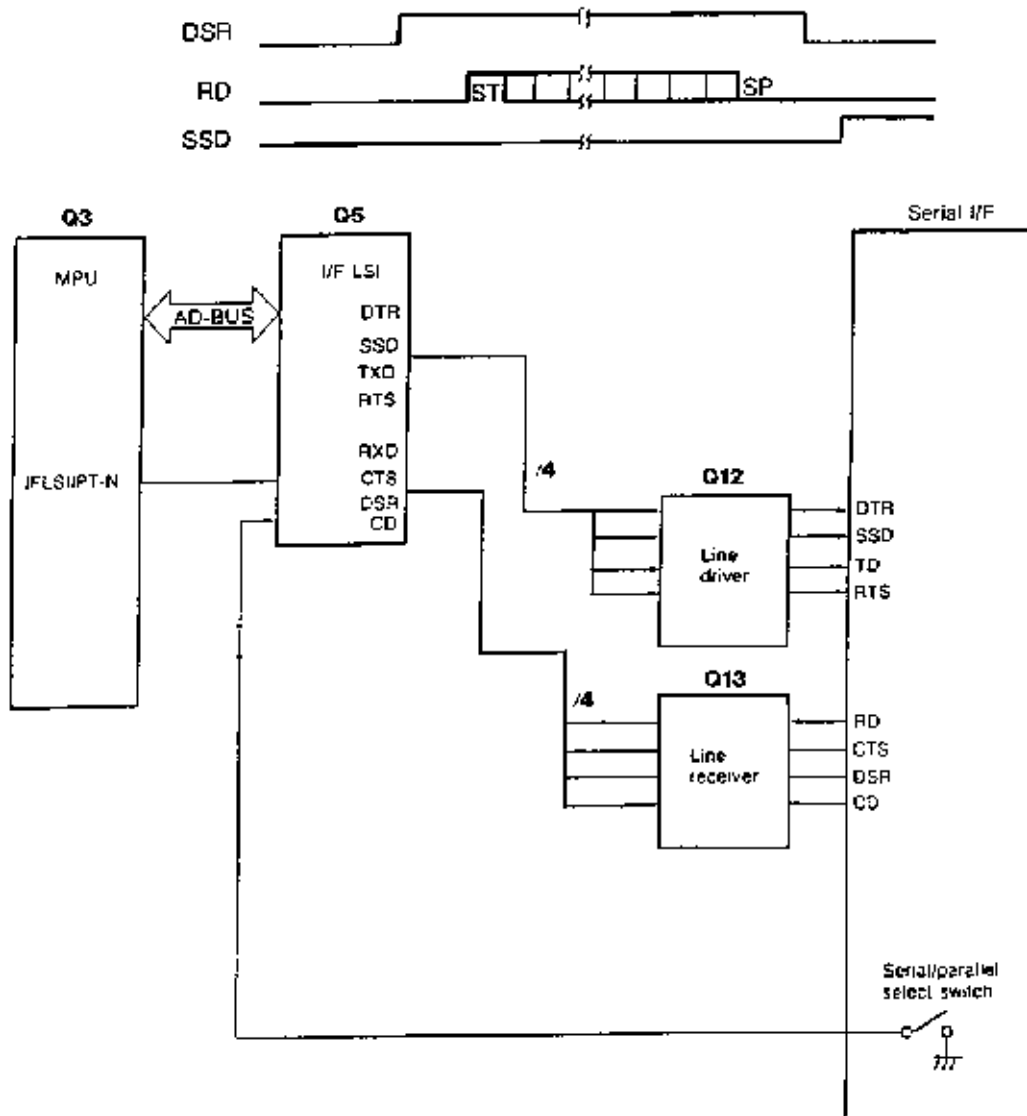


RS232-C Serial Interface

When the interface select switch is turned ON, the serial interface is selected and Q5 is in the serial interface mode.

The RS232-C interface signals (DSR, CTS, CD and RD) are converted to TTL levels by the line receiver (Q13) and input to Q5 where the serial data is converted to parallel data.

The interface signals (DTR, RTS, SSD and TD) output from Q5 are converted from TTL levels to RS232-C levels by the line driver (Q12) and sent to the serial interface connector.





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Chapter 2 Principles of Operation

2.1.05 Printhead Drive Circuit

This circuit is used to drive the 9 print wires. The signals HD01 through HD09 from Q2 are used to enable the individual wire drivers (TRA1 and TRA2). TRA1 drives Pins 1, 2, 6 and 7. TRA2 drives Pins 3, 4, 8 and 9. TR7 drives Pin 5. The HD ON signal enables the drive circuit when printing is desired. The head drive duration is determined by an RC integrating circuit which modifies the HD ON pulsewidth. The pulsewidth of the HD ON signal varies with the number of pins being driven. The drive time is increased as a greater number of pins are driven, but decreased as less pins are to be driven. The drive time is also increased if the head gap lever is placed in positions 3 through 9. The RC circuit is also used to compensate for the fluctuation of drive voltage (+38vdc).

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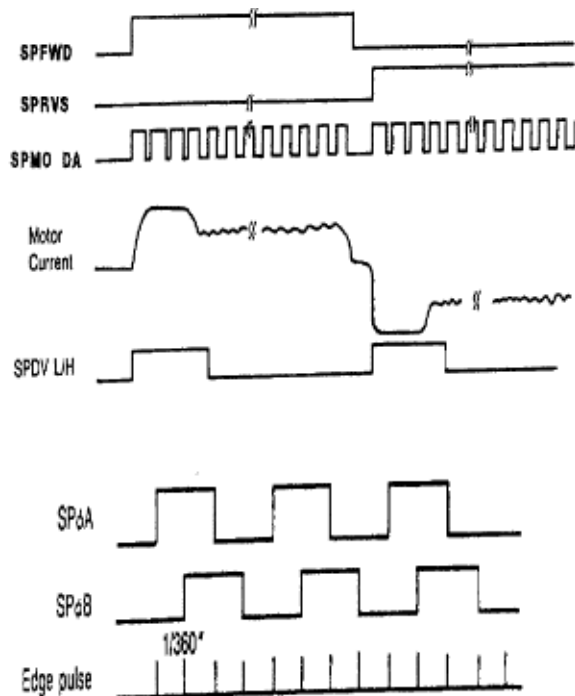
2.1.06 Spacing Drive Circuit

After receiving a spacing command from the MPU (Q3), the Interface/Motor Control LSI (Q5) outputs the SPFWD signal to run the DC motor in the forward direction, or the SPRVS signal to run the DC motor in the reverse direction. This is a fixed pulsewidth signal.

To control the motor speed, Q5 varies the pulse duty cycle according to feedback received from the space motor. As the space motor rotates, the SPSP Board (inside the motor housing) generates feedback pulse signals SPfA and SPfB. Q5 detects the edge pulses from these signals and divides the frequency to output the IPT signal for use in printhead dot timing.

The space motor interlock switch (located at the left side of the shield plate) disables the space motor drive signals whenever the printer cover is open.

Fuse F1 (3.5 amperes) protects the +38vdc space motor power circuit, should an overdrive condition exist.





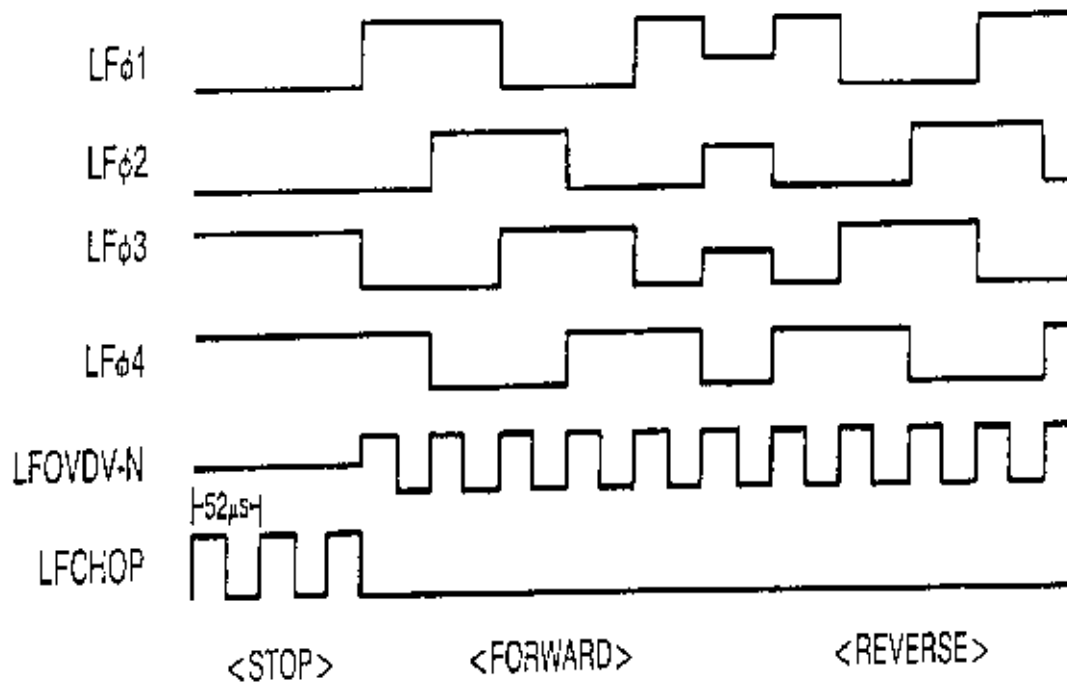
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2.1.07 Line Feed Circuit

Whenever it is in a stopped position, the line feed motor shaft is held stationary by +8vdc, which is enabled by the LFCHOP Signal from Q2. The holding current is approximately 30 ma.

During a line feed operation, the line feed motor is driven by +38 vdc in accordance with the LFOVDV signal. The signals LF - Phase 01 and LF - Phase 04 establish the proper phase relationship for driving the motor. However, the line feed motor uses Phase 1 - 4.



2.1.08 Alarm Circuits

Fault Alarm Circuit (in Power Supply Unit)

This protective circuit turns off the power supply when a fault occurs in the printhead, line feed, or bail motor drive circuits, thus preventing secondary component failure.

To accomplish this, the circuit monitors the overdrive signal of each drive circuit. If the duration of any drive circuit exceeds a predetermined length of time, the appropriate signal (EVN COM, ODD COM, LF COM or BM COM) will be sent to the fault alarm circuit. The fault alarm circuit generates the ALM signal which causes the power supply to turn all DC power OFF.

Printhead Overheat Alarm Circuit

In order to protect the printhead coils, this circuit monitors the printhead temperature by using a thermistor contained in the printhead. The CPU senses this circuit every time a line is printed.

When printing, the printhead temperature will increase. If the head temperature reaches approximately 115° Celsius, a head overheat ALARM 1 is generated. When ALARM 1 is detected by the MPU, the printer will begin unidirectional printing. If the printhead temperature increases to 125° Celsius, ALARM 2 is generated and printing is halted until the head temperature decreases. When the head temperature returns below the ALARM 1 threshold, printing is resumed.

Cover Open Alarm Circuit

When the front access cover is opened, the CVOPEN-N signal is sent to the MPU from the cover interlock microswitch. The MPU will halt printing immediately and light the ALARM Lamp.



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2.1.09 Paper End Detection Circuit

NOTE:

Paper End is also known as paper out

Whenever the release lever is in the Tractor (Continuous) Feed position, paper end is detected by the microswitch on the push tractor (*rear feed*) or the paper end sensor on the sensor board (*bottom feed*).

Whenever the release lever is in the Friction (Sheet) Feed position, Paper End is detected by a photosensor (*top feed*) located in the paper pressure guide.

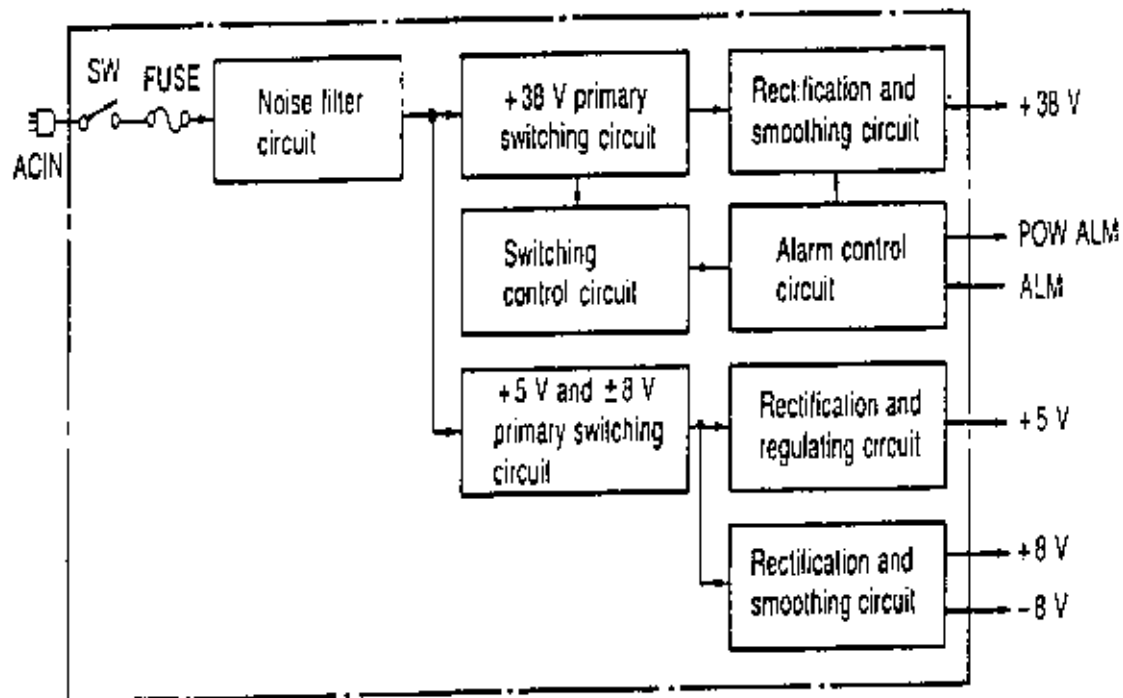
When the printer detects an out of paper condition, the PEN (Paper End) signal goes low, the printing is stopped and the ALARM LAMP is turned ON.

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2.1.10 Power Supply

This switching power supply converts the AC input voltage to +5vdc, +/-8vdc and +38 vdc for use throughout the printer.

Voltage / Signal Table



Voltage/Signal	Purpose
+5 vdc	IC logic Levels - LED Drive Voltage
+8 vdc	Serial Interface logic Levels - Line Feed Motor Locking Voltage
-8 vdc	Serial Interface logic Levels

+38 vdc	Printhead Space Motor Line Feed Motor Bail Motor Drive Voltage
POW ALM	Output from the Power Supply in the event of an abnormal temperature rise in the power supply unit or an overcurrent condition of the +38 vdc. The main logic board suppresses this condition by temporarily suspending printing. If the condition does not change the main logic board will enable the FAN ALARM. Refer to Section 4 - Failure Analysis
ALM	Input from the main logic board upon detection of an overdrive condition in the printhead line feed motor or bail motor drive circuits. Upon detecting this signal the power supply disables the +38 vdc output.



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2.2 MECHANICAL OPERATION

2.2.01 Printhead Mechanism

The printer uses a highly efficient stored energy type printhead. Power is not consumed until the printwires are activated, thereby extending the printhead life to approximately 200 million characters.

The printhead uses 9 printwires in two columns. Each wire is welded to an armature. Behind this armature is a spacer ring.

Each of the 9 printwire armatures has a permanent magnet behind it. The magnets attract the armatures, pulling the printwires into the wire guide, thus keeping the wires inside the printhead. A coil is wrapped around each of the permanent magnets.

When a dot is to be printed, current is passed through the appropriate coil. This creates an electromagnetic field which counters the magnetic field of the permanent magnet. The armature can then spring forward and the print wire (which is attached to the armature) strikes the ribbon and imprints a dot on the paper.

When current is removed from the coil, the magnetic field of the permanent magnet attracts the armature, causing the printwire to retract into the wire guide once again.

The printhead consists of the parts listed below.

- Wire Guide

- Print Wires

- Armature Assembly

- Spacer

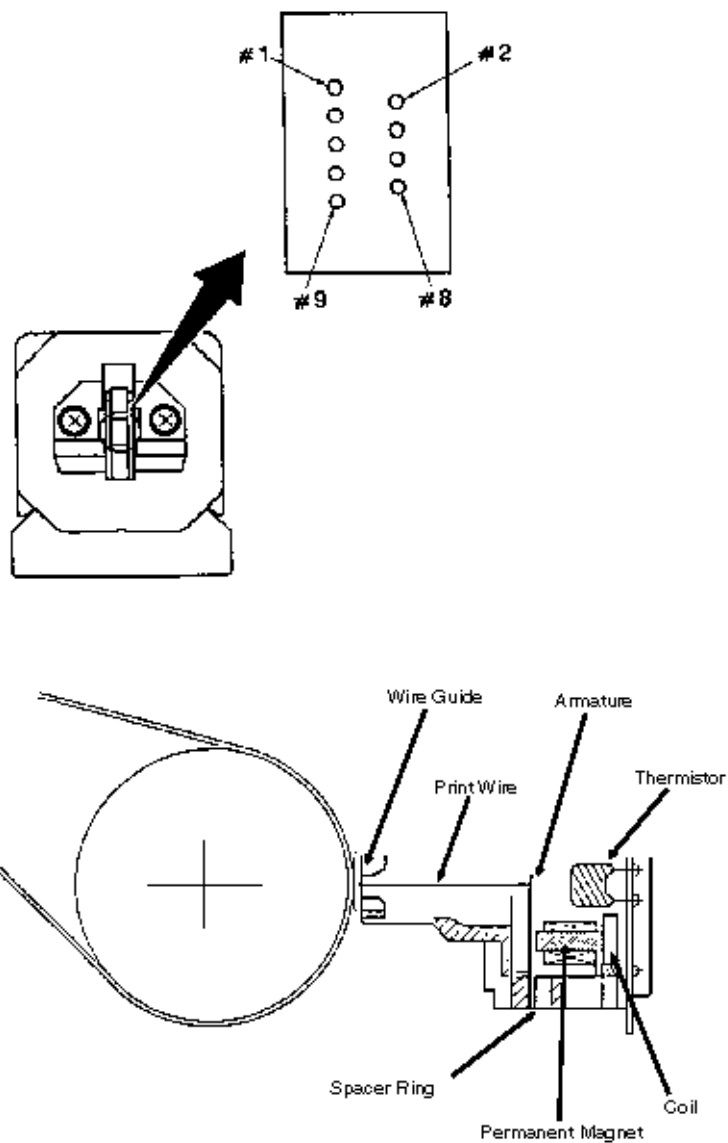
- Permanent Magnet Assembly

- Thermistor: used to monitor the printhead temperature

- Printed Circuit board with Coils

Head Gap Adjusting

The head gap adjusting mechanism modifies the gap between the platen and printhead. This is accomplished by moving the adjusting lever on the right side of the printer mechanism. When the lever is moved, the carriage shaft rotates. Since the carriage shaft is attached to the printer mechanism through eccentric collars, turning the carriage shaft, changes the distance between the platen and the printhead.



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2.2.02 Spacing Mechanism

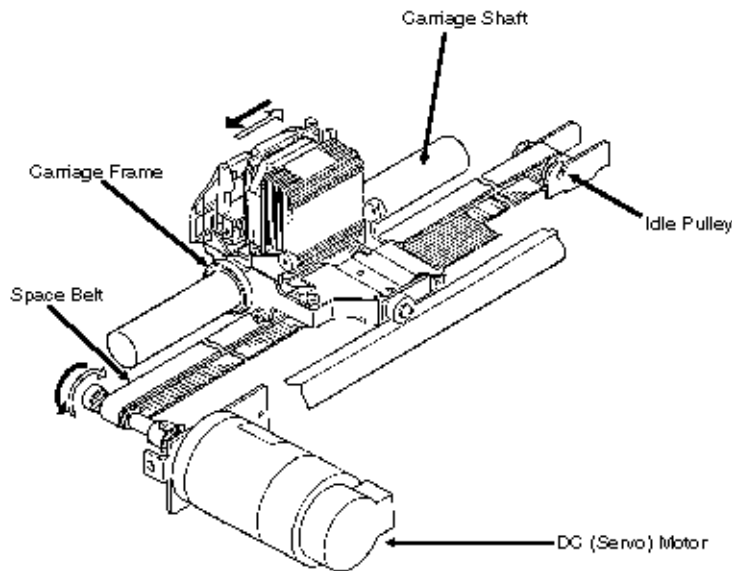
Spacing is performed when the servo motor drives the carriage along the carriage shaft, parallel to the platen.

The spacing mechanism consists of the following items.

- DC (Servo) Motor
- Idle Pulley
- Carriage Shaft
- Carriage Frame
- Space Belt

Spacing Operation

The carriage containing the printhead moves parallel to the platen along the carriage shaft. Power from the space motor is transferred via the space belt, which is attached to the bottom of the carriage. The carriage is designed to move 1.6 inches when the servo motor performs one rotation.



2.2.03 Ribbon Drive Mechanism

The ribbon drive mechanism moves the ribbon in synchronization with the space motor operation.

The ribbon drive mechanism consists of the items listed below.

- Ribbon Drive Assembly

- Ribbon Cartridge

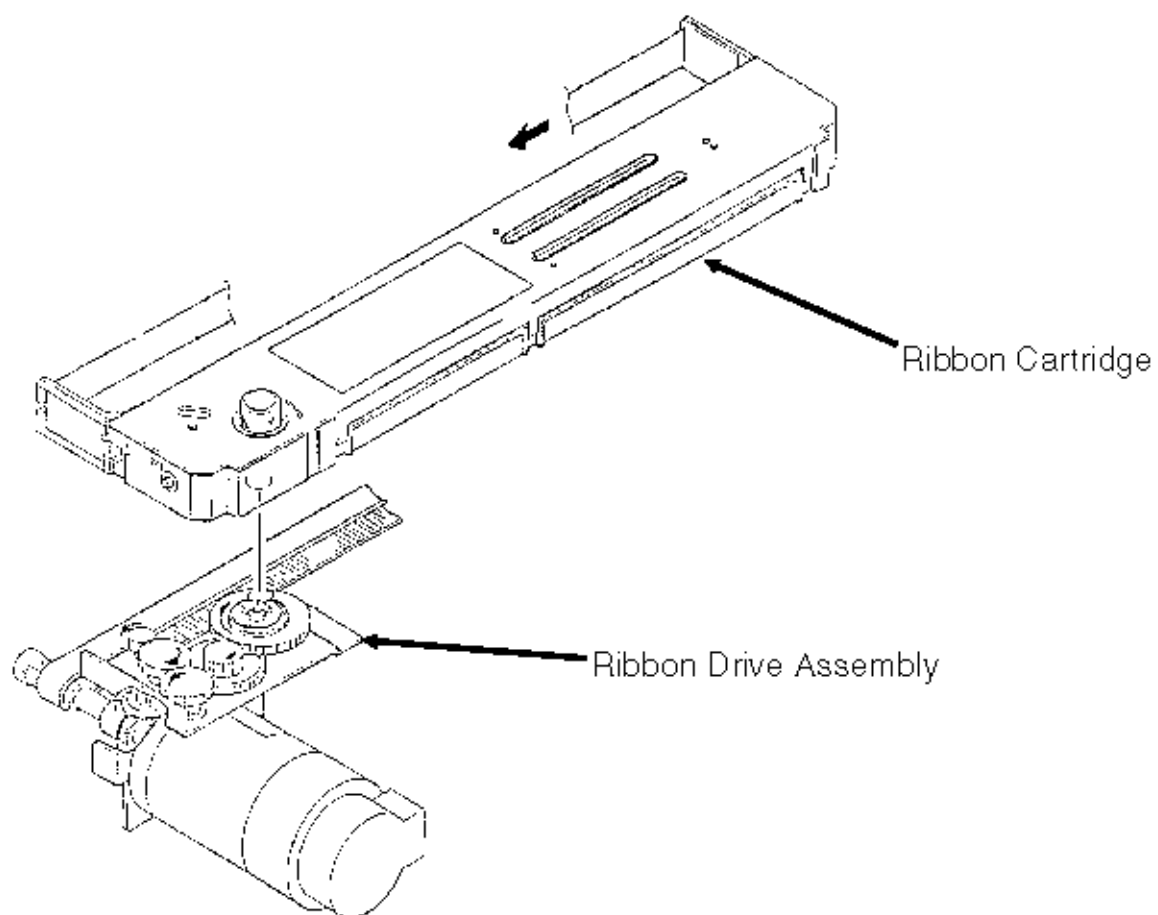
Ribbon Cartridge

An endless ribbon with a single direction feed is used. Ink is supplied from an ink tank, which is contained in the ribbon cartridge.

Ribbon Feed Operation

The rotation of the space motor is transmitted to the drive gear in the ribbon cartridge through the ribbon feed gear assembly, thereby feeding the ink ribbon.

The feed direction of the ribbon is maintained by switching the rotational direction of the gears in the ribbon drive assembly. This ensures unidirectional ribbon movement when bi-directional printing is used.



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2.2.04 Paper Feed Mechanism

Paper feeding is performed by turning the platen and the tractors, which are driven by the line feed pulse motor.

The paper feed mechanism consists of the items listed below.

- Line Feed (Pulse) Motor with gears
- Idle Gear
- Change Spring
- Change Gear
- Platen
- Push Tractor Assembly
- Bottom Tractor Feed Unit
- Paper Pressure Guide

Friction (Sheet) Feed

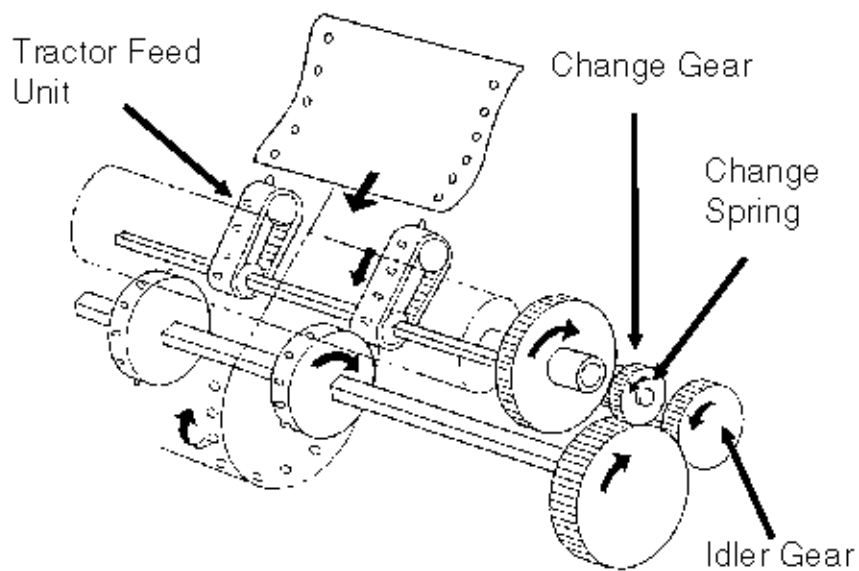
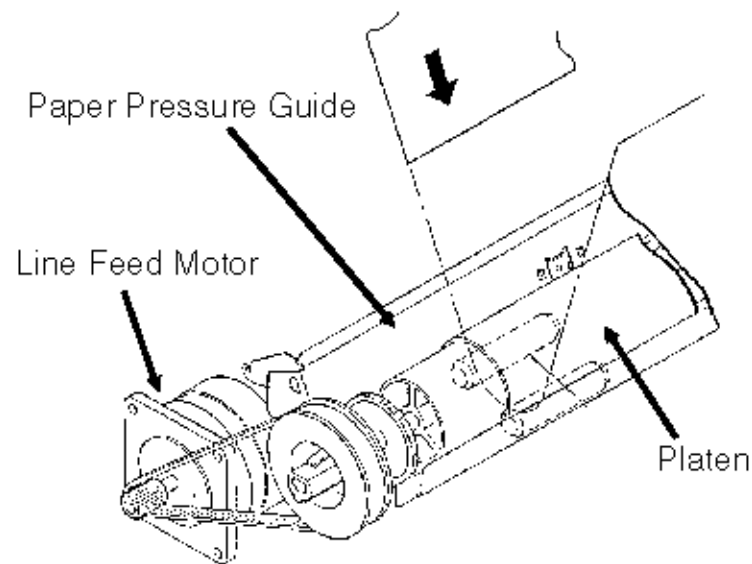
When the release lever is set to the SHEET FEED position, the change gear is disengaged from the tractor gear. At the same time, the release lever applies pressure to push the pressure rollers against the platen, allowing paper to be fed.

A photosensor located in the paper pressure guide detects PAPER END.

Tractor (Continuous) Feed

When the Release Lever is set to the TRACTOR FEED position, the release lever allows the reset spring to push the change gear toward the tractor gear. At the same time, the release lever pushes the pressure rollers away from the platen, allowing paper to be fed by the tractors.

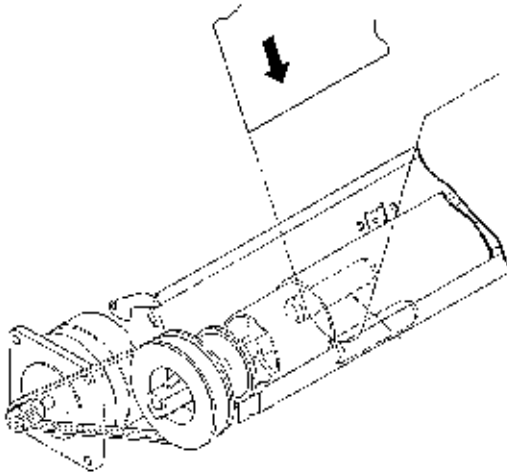
The microswitch on the push tractor (rear feed) and the paper end sensor on the sensor board (bottom feed) detect PAPER END.



2.2.05 Paper-End Detection Mechanism

Friction Feed (Cut-Sheet) Paper-End

When the Release Lever is in the SHEET FEED Position, the photosensor located in the Paper Pressure Guide is active. If sheet paper is installed, the paper is detected by the sensor and the sensor is turned ON. When the printer is out of sheet paper, the sensor is turned OFF indicating a paper-end condition.

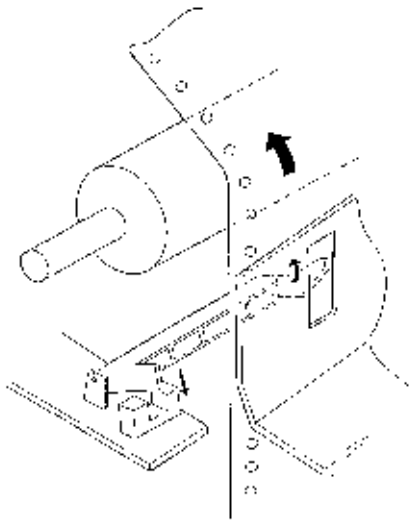


Continuous (Bottom) Feed Paper-End

(Also used with Bottom Tractor Feed Unit)

When the Release Lever is in the TRACTOR FEED Position, the switch on the left Push Tractor and the Paper-End sensor on the sensor board are active. If paper is detected by either of these sensors, paper-end is inhibited.

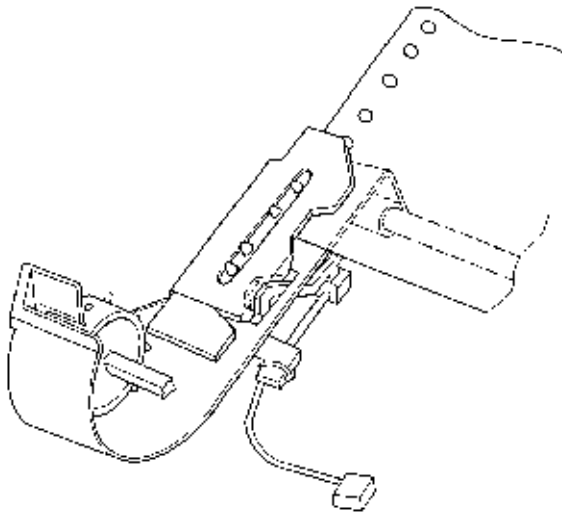
When bottom feed paper is installed, it moves the bottom paper-end lever to turn the sensor ON. When a paper out condition exists, the lever blocks the sensor, indicating a paper-end condition.



Continuous (Rear) Feed Paper-End

When the Release Lever is in the TRACTOR FEED Position, the switch on the left Push Tractor and the Paper-End sensor on the sensor board are active. If paper is detected by either of these sensors, Paper-End is inhibited.

When rear feed paper is installed, pressure is placed on the microswitch, located in the left push tractor. Since the switch is turned ON, paper is detected.



2.2.06 Automatic Paper Loading

Automatic Paper Loading is used to consistently set the print start position when using cut-sheet or continuous sheet paper. The autoloading procedures for each type of paper follow.

Cut-Sheet Paper

1. Push the paper release lever to the cut-sheet position.
2. Insert the paper from behind the platen.
3. Press the FORM FEED switch.
4. The paper bail will automatically open.
5. The line feed operation will load the paper.
6. The paper bail will automatically close.

NOTE:

If the paper does not move, the Auto-Load motion becomes invalid and is treated like an ordinary paper-end condition.

Continuous Sheet (Rear Feed) SASF

1. Push the paper release lever to the continuous sheet side (front of printer).
2. Insert the paper into the push tractor. The white guide line on the left tractor MUST be visible.
3. Press the FORM FEED switch.
4. The paper bail will automatically open.
5. The line feed operation will load the paper.
6. The paper bail will automatically close.

NOTE:

If the paper does not move, the auto-load motion becomes invalid and is treated like an ordinary paper-end condition.



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2.2.07 Paper Park Feature

Occasionally, the user will want to print on cut-sheet paper, and continuous feed paper is loaded in the printer. Rather than unloading the continuous feed paper, the operator can use the paper park feature. Paper Park retracts the continuous feed paper until a paper-end condition exists or until 14 inches of paper has been retracted. The continuous feed paper remains on the push tractor (or bottom tractor feed unit), but out of the printing path. This allows cut-sheet paper to be loaded. Once the cut-sheet printing is complete, the continuous feed paper is reloaded.

CAUTION:

Do not attempt to PARK labels or more than one sheet of paper

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Chapter 3 Maintenance & Disassembly

3.1 OVERVIEW

3.1.01 General Information

This section lists the parts replacement, adjustment, cleaning, lubrication, and shipping procedures.

Disassembly should not be performed unless absolutely necessary. **NEVER** perform disassembly on a malfunctioning unit until you have followed the failure analysis procedures in Section Four of this Service Handbook.

Follow the procedures listed in *Adjustments and Service Settings*. Adjustments may be required when either consumables or parts are replaced. Failure to perform these procedures could result in unnecessary service calls.

Cleaning procedures must be performed correctly if high print quality is to be achieved.

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3.1.02 Maintenance Items

The following items are required to service the unit.

#1 Phillips Screwdriver (with magnetic tip, 10 inch shaft)

#2 Phillips Screwdriver (with magnetic tip, 6 inch shaft)

#3 Phillips Screwdriver (with magnetic tip)

Straight-slot Screwdriver (1/4 inch)

Needle Nose Pliers (4 inch)

Diagonal Cutters

Tension Gauge (capable of measuring 1 pound of pressure)

7 mm open-ended wrench

Ruler (capable of measuring 1/16 inch increments)

3/32 inch socket with driver

Feeler Gauge

Paper Clip (used for Microswitch 2 modification)

Digital Multimeter

Shop Vacuum

Cloth (soft and lint-free)

All-Purpose Cleaner

Machine Oil

Graphite Based Lubricant

Contact Kleen (Okidata P/N 51802301)



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3.1.03 Maintenance Precautions

1. Do not disassemble the unit if it is operating normally.
2. Before starting disassembly and assembly, always power OFF the unit and detach the AC power cord.
3. Detach the interface cable, if installed.
4. Do not remove parts unnecessarily. Try to keep disassembly to a minimum.
5. Use the recommended maintenance tools.
6. When disassembling, follow the listed sequence. Failure to follow the correct sequence may result in damaged parts.
7. Since screws, collars and other small parts are easily lost, they should be temporarily attached to the original positions.
8. When handling circuit boards use extreme care. Integrated circuits (microprocessors, ROM, and RAM) can be destroyed by static electricity.
9. Do not place printed circuit boards directly on conductive surfaces.
10. Follow the recommended procedures when replacing assemblies and units.
11. Perform the printhead gap adjustment when any of the items listed below occur.
 - Print Quality is darker on one side of the document.
 - Parts / Assemblies are replaced.

[Printhead \(3.2.01\)](#) 

[Platen Assembly \(3.2.16\)](#) 

[Carriage Shaft \(3.2.22\)](#) 



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Chapter 3 Maintenance & Disassembly

3.2 DISASSEMBLY/ASSEMBLY PROCEDURES

General Information

This section contains the printer disassembly procedures. Only the removal procedures are explained here. Reverse the procedure for the installation.

At the bottom of each procedure is a listing of the parts covered in that procedure. The Okidata part number, item description, comment (RSPL, Option, Consumable) and cross-reference to Appendix B is provided for each part. Items included in the Recommended Spare Parts List are indicated by the acronym RSPL. N/A will appear where a part number is not available.

Part Item Comment Appendix B Number Description Reference

This Service Handbook lists the disassembly procedures for major components of the unit. Okidata DOES NOT recommend disassembling a unit which is operating normally. If you decide to perform disassembly during this training, Okidata recommends that you perform *only* the disassembly procedures for RSPL items. All other procedures are provided to assist you in identifying parts. It is not likely that you will perform these procedures while servicing the unit.

Be sure to read all notes, cautions, and warnings, as they contain important information regarding disassembly / assembly.

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3.2.01 Printhead (with Preliminary Items)

WARNING:

The printhead will be HOT immediately after printing.

1. Open the printer access cover (1).
2. Remove the ribbon cartridge (2).
3. Set the head gap adjusting lever (3) to the range 9 position.
4. Lift and remove the ribbon guide (4) from the two posts.
5. Remove the two printhead mounting screws (5).
6. Disconnect the printhead (6) from the connector by lifting.

NOTES:**Installation**

Push the printhead towards the platen (in the direction of Arrow A).

Perform the printhead gap adjustment. Refer to Section 3.3 

P/N 50215701 Cover: Access RSPL B.2.02 

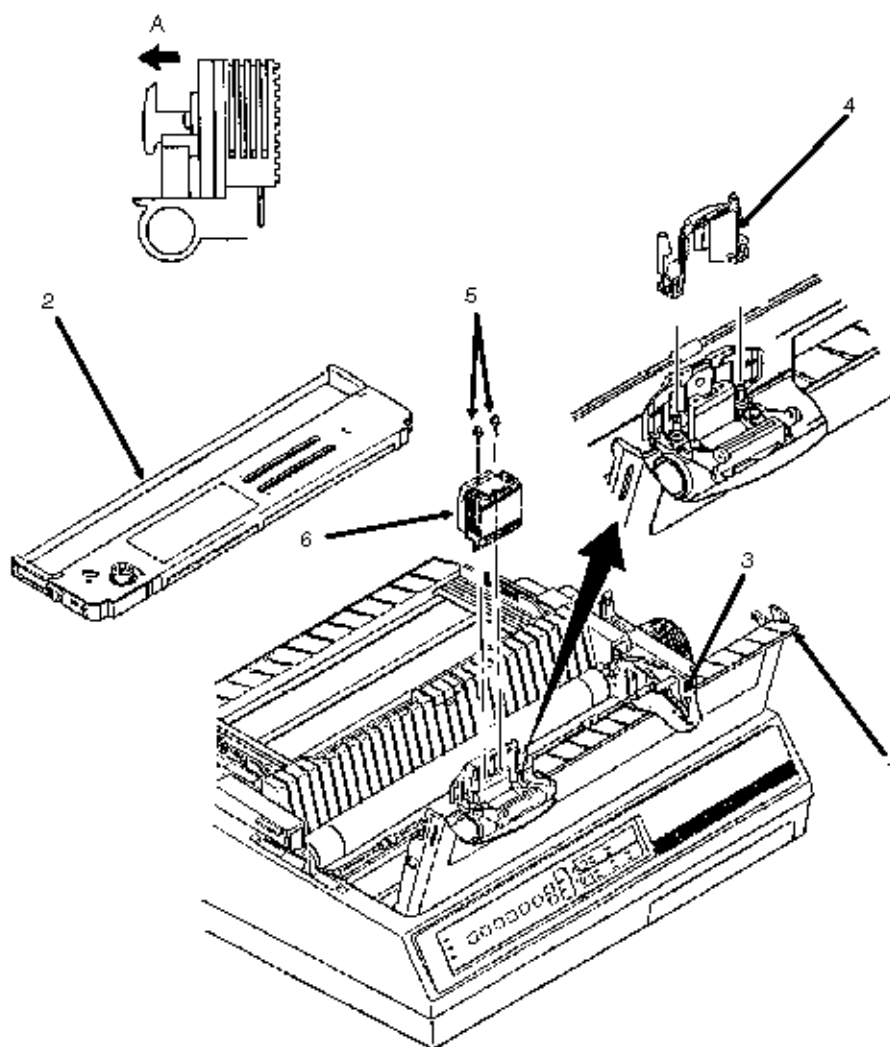
P/N 50090301 Printhead: Assembly RSPL B.2.03 

P/N 52105801 Ribbon Cartridge Consumable B.2.03  **B.2.12** 

P/N 56609701 Cord: AC (120V) RSPL B.2.03 

P/N 56624101 Cord: AC (220V) (ML) Right Angle Option B.2.03 

P/N 53062601 Guide: Ribbon Assembly RSPL B.2.05 



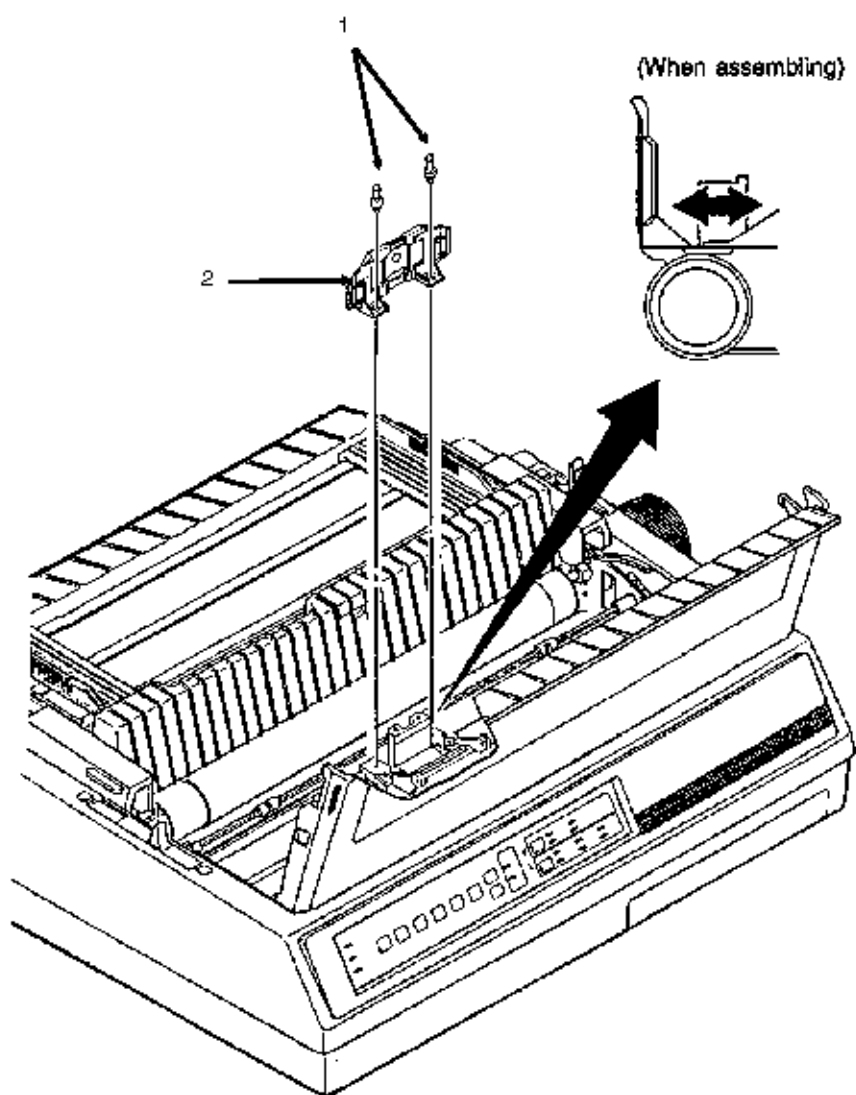
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3.2.02 Ribbon Protector Assembly

1. Open the printer access cover.
2. Remove the ribbon cartridge.
3. Set the head gap adjusting lever to the range 9 position.
4. Lift and remove the ribbon guide from the two posts.
5. Remove the two mounting screws (1) and detach the ribbon protector (2) by lifting.

P/N 50316701 Screw: Ribbon Protector (Post) RSPL B.2.05 

P/N 53062701 Protector: Ribbon Assembly RSPL B.2.05 



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3.2.03 Upper Cover Assembly

1. Detach the platen knob (1).
2. Pull the release lever (2) toward the front of the printer.
3. Remove the two cover mounting screws (3), located at the rear of the printer.
4. Lift the sheet separator (4).
5. Open the bail arm (5).
6. Grasp the pull-up roller assembly (6), then lift and rotate it towards the back of the printer.
7. Close the bail arm.
8. Lower the sheet separator.
9. Lift the upper cover assembly (7) at the rear of printer. Rotate the assembly towards the front of the printer, disengaging the cover from the four claws (8) at the front of the printer.

CAUTION:

When installing the upper cover assembly, move the bail arm lever towards the back of the printer and move the release lever towards the front of the printer. Then, check that the paper bail moves properly.

P/N 50212431 Cover: Middle (PM3410) RSPL B.2.02 

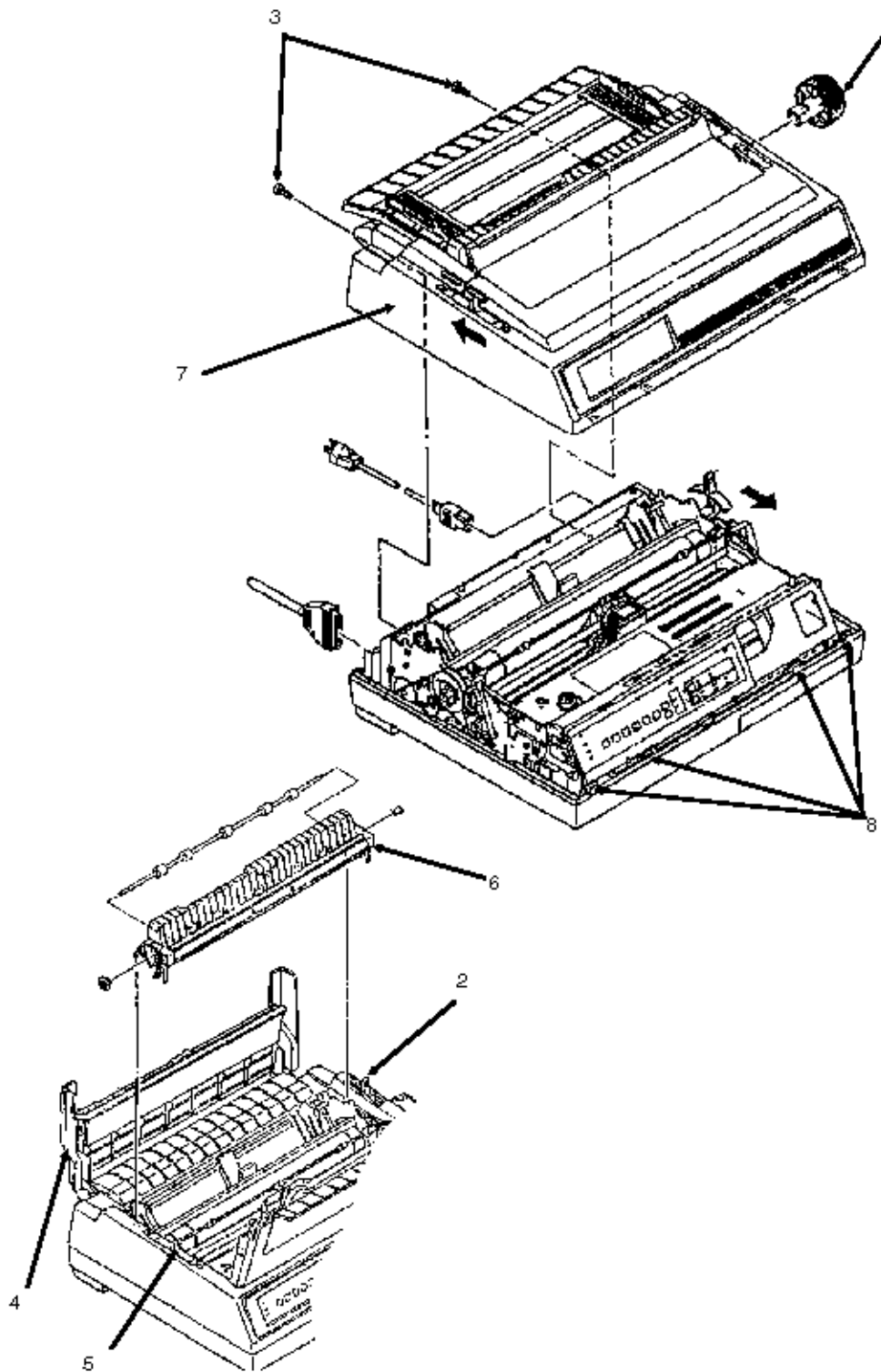
P/N 50215801 Cover: Rear (Assembly) RSPL B.2.02 

P/N 50215901 Pull-Up Roller Assembly RSPL B.2.02 

P/N 50215901 Pull-Up Roller Assembly RSPL B.2.03 

P/N 53478601 Knob: Platen RSPL B.2.03 

P/N 50910505 Spring: Cover Open RSPL B.2.04 



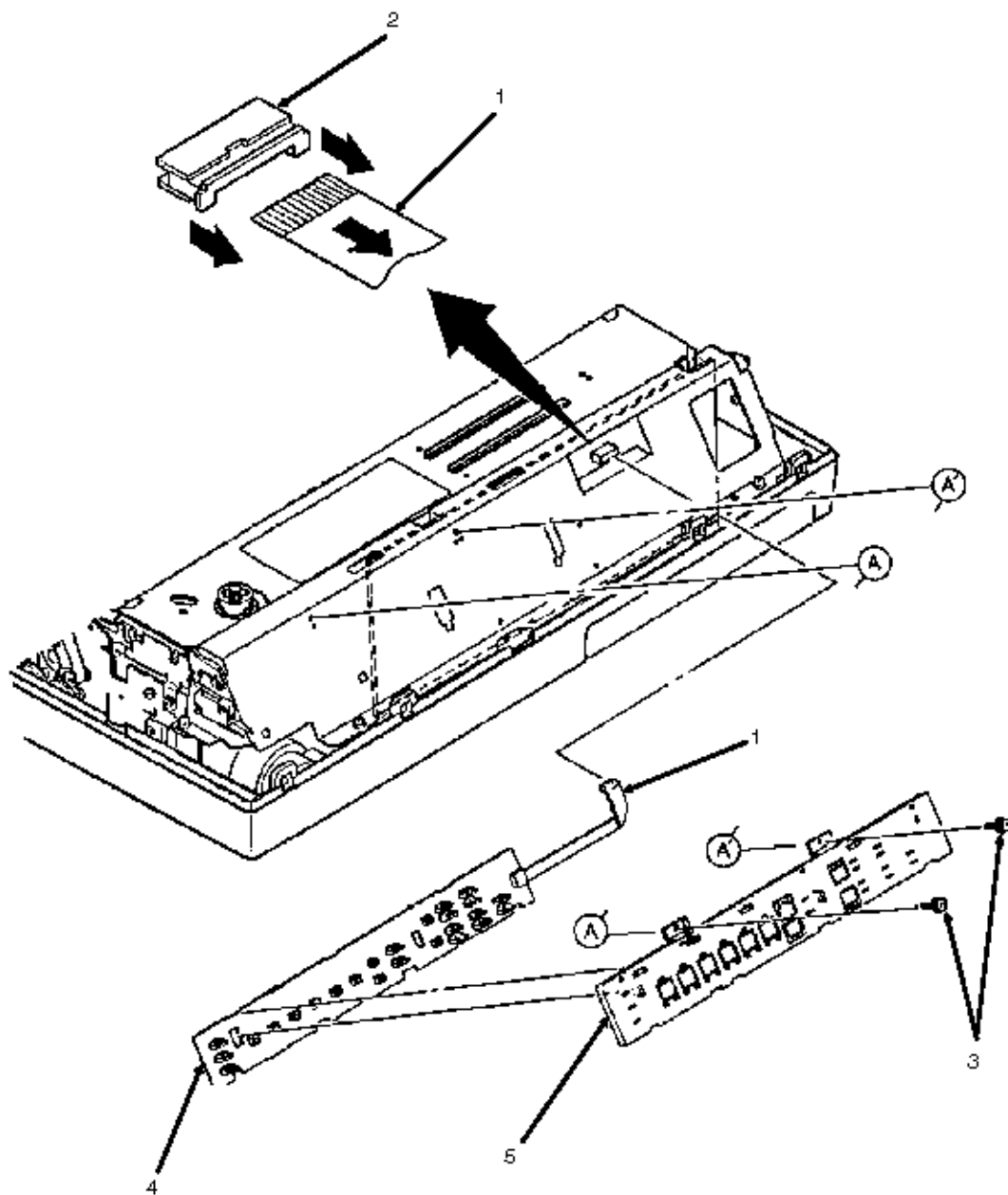
3.2.04 Operator Panel

1. [Remove the upper cover assembly \(3.2.03\)](#) 
2. Disconnect the operator panel cable (1) from CN10 (2) on the control board.
3. Remove the two mounting screws (3).
4. Detach the operator panel assembly by moving it upward, and then pulling toward the front of the printer, detaching the four claws.
5. Release the ten claws.
6. Detach the operator panel (4) from the operator panel holder (5).

[P/N 53553401 Panel: Operator \(PM3410\) RSPL B.2.04](#) 

[P/N 55061401 PCB: OPML Operation Panel RSPL B.2.04](#) 

[P/N 56628402 Cable: Op Panel \(PM3410\) RSPL B.2.04](#) 



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3.2.05 Interface Connector Board

NOTE:

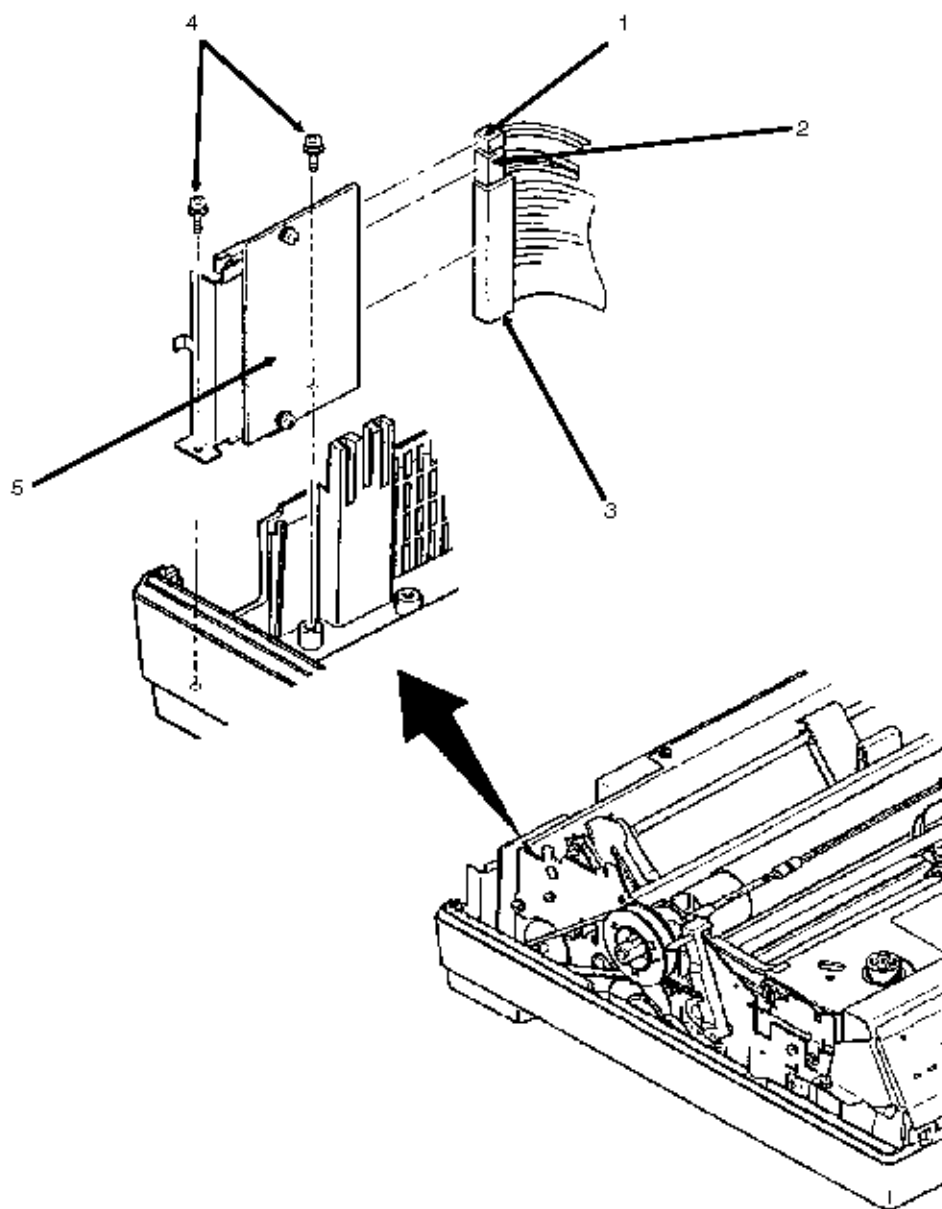
To allow easier access to the mounting screw and cables, configure the interface connector board to use the serial interface connector.

1. [Remove the upper cover assembly \(3.2.03\).](#) 
2. Disconnect connectors CN101 (1), CN102 (2), and CN103 (3).
3. Remove the two mounting screws (4) and detach the interface connector board (5) by lifting.

NOTE:

After assembly, configure the interface connector board for the desired type of interface.

[P/N 55061711 PCB: HKTY Interface Connector Assembly RSPL B.2.03](#) 



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3.2.06 Main Logic (CBNP) Board

1. Remove the upper cover assembly. [\(3.2.03\)](#) 
2. Remove the ribbon cartridge.
3. Release the lock of connector CN10 (1) and detach the operator panel cable (2).
4. Remove the five shield cover mounting screws (3).
5. While slightly lifting the shield cover (4), detach connectors CN11 (5) and CN12 (6) from the main logic board.
6. Remove the shield cover.
7. Detach the connectors CN1, CN2, CN3, CN5, CN6, CN7, CN8, and CN9 (7).
8. Loosen the mounting screw (8).
9. Remove the main logic board (9).

CAUTION:

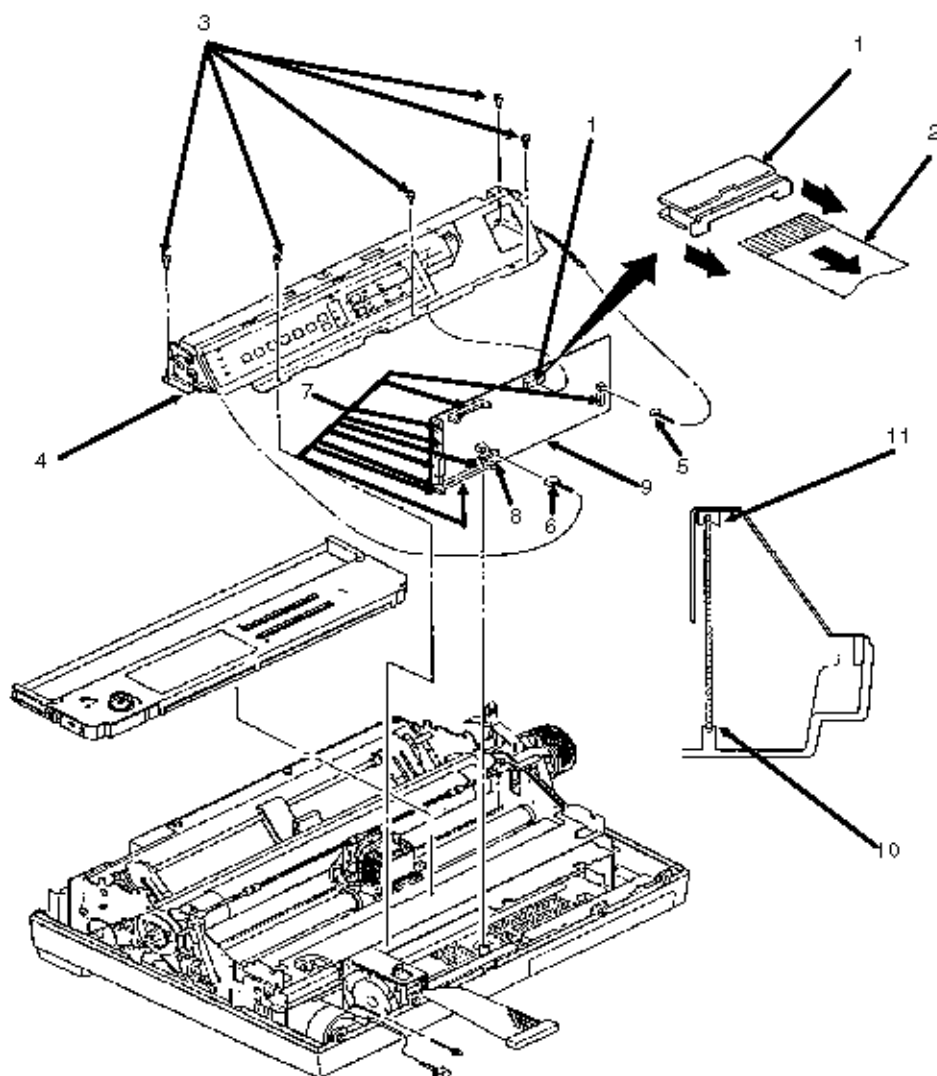
When assembling the printer, follow these instructions.

1. Do not allow cables to get caught under the main logic board.
2. Insert the main logic board into the groove in the base tray (10).
3. Fit the main logic board into the groove (11) in the shield cover, then secure the shield cover.

[P/N 55061611 PCB: CPNB Main Logic \(w/o ROM\) RSPL B.2.03](#) 

[P/N 55934601 IC: EEPROM NM93C06N-NW RSPL B.2.03](#) 

[P/N 56212601 Switch: Interlock \(Assy\) RSPL B.2.04](#) 



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3.2.07 Printer Mechanism

1. Remove the main logic board [\(3.2.06\)](#). 
2. Detach connectors CN102 (1) and CN103 (2) from the interface connector board (3).
3. Remove the three mounting screws (4) at the rear of the printer mechanism (5).
4. Remove the three mounting screws and brackets (6). There are two on the left side of the printer mechanism and one on the right side.

CAUTION:

***Do not** grasp the ribbon cartridge bracket, paper chute, or the guide shaft of the sheet feeder assembly when lifting the printer during the next step.*

5. Grasp the printer mechanism near the line feed motor (Position A).
6. While holding at position A, also grasp the printer mechanism (Position B).

CAUTION:

DO NOT GRASP THE RIBBON CARTRIDGE BRACKET -- IT WILL BEND.

7. Lift and remove the printer mechanism.

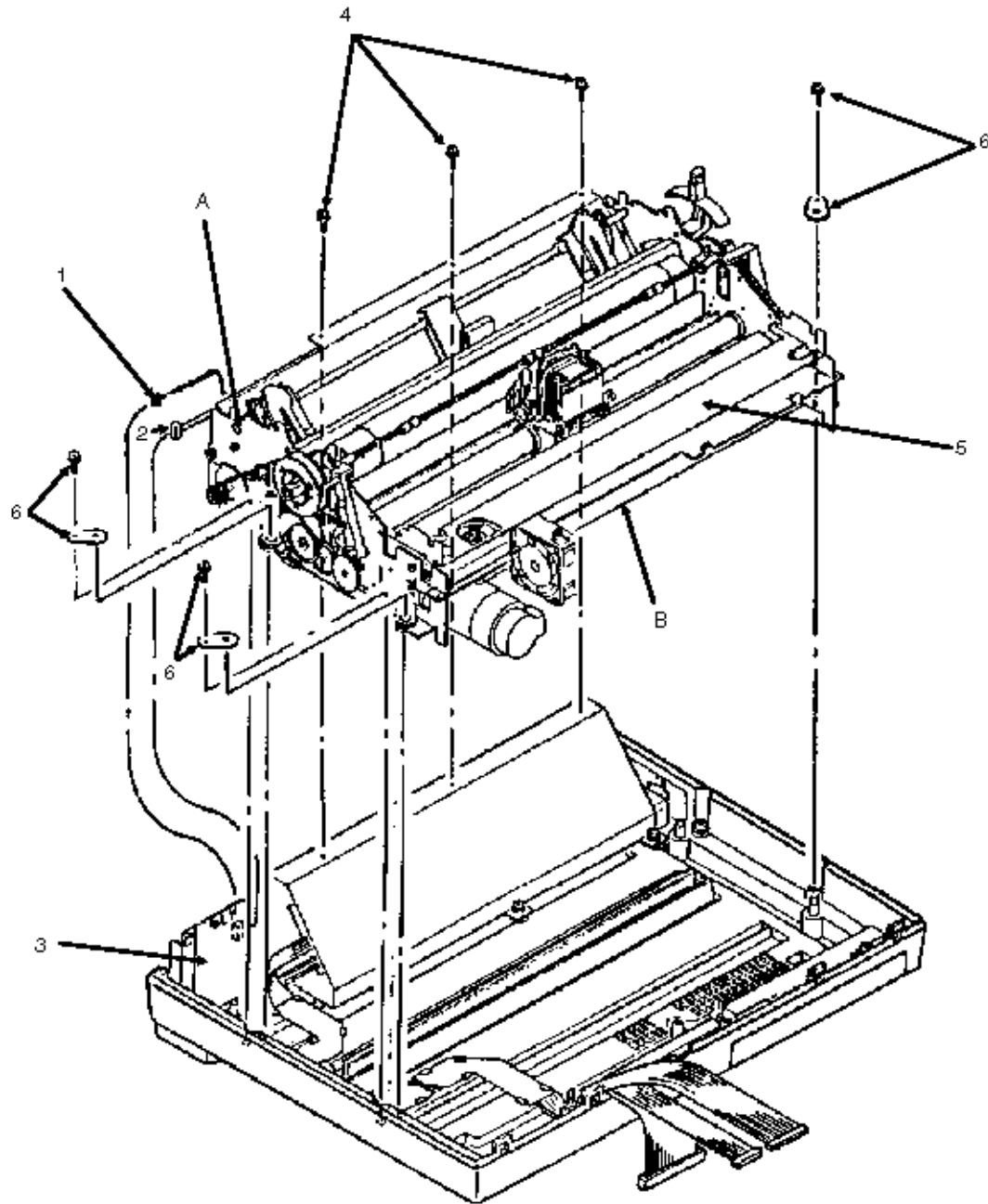
NOTE:

When assembling the printer, do not allow cables to get caught under the printer mechanism.

P/N 56614101 Cord: Power Connection (9 Pin) RSPL B.2.03 

P/N 56614801 Cord: Power Connection (13 Pin) RSPL B.2.03 

P/N 56614901 Cable: I/F (Internal) [I/F-Main Brd 50 Pin] RSPL B.2.03 



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3.2.08 Power Supply Unit

1. Remove the printer mechanism (3.2.07).
2. Disconnect the two cables (1) from the left side of the power supply unit (2).
3. Remove the four power supply mounting screws (3).
4. To remove the power supply unit:

Rotate the left side of the power supply unit towards the front of the printer.

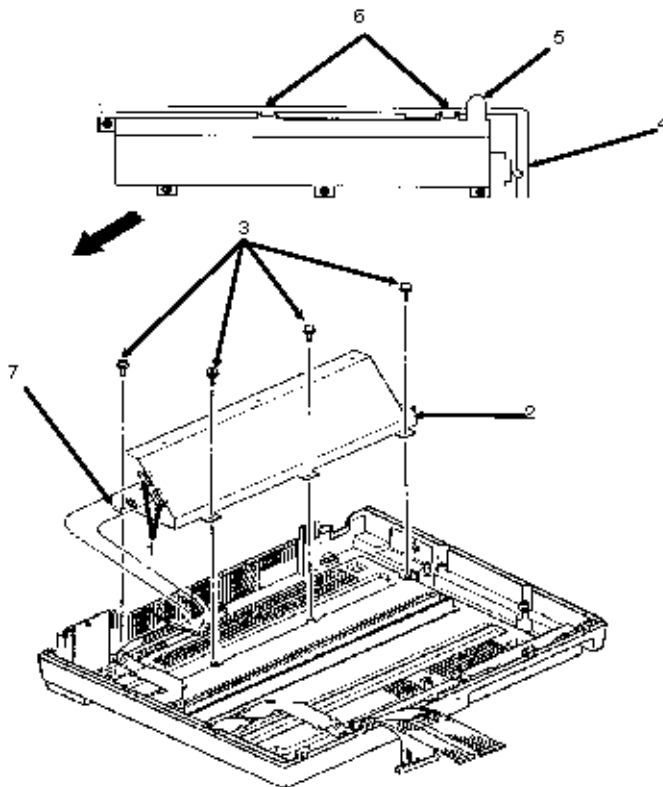
Lift the power supply unit to disengage the power switch (4), AC receptacle (5) and the tabs (6).

CAUTION:

Be careful not to damage the cables with the power supply unit mounting bracket (7). This bracket is located at the left/rear of the power supply unit.

P/N 56406302 Power Supply Assembly (220/240 V) Option B.2.03

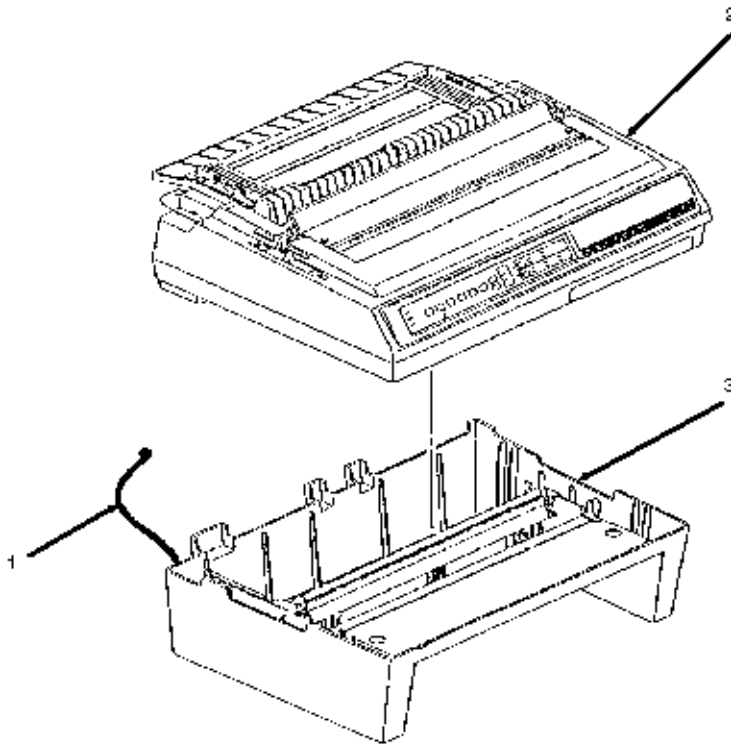
P/N 56411201 Power Supply Assembly (120 V) RSPL B.2.03



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3.2.09 Printer Unit

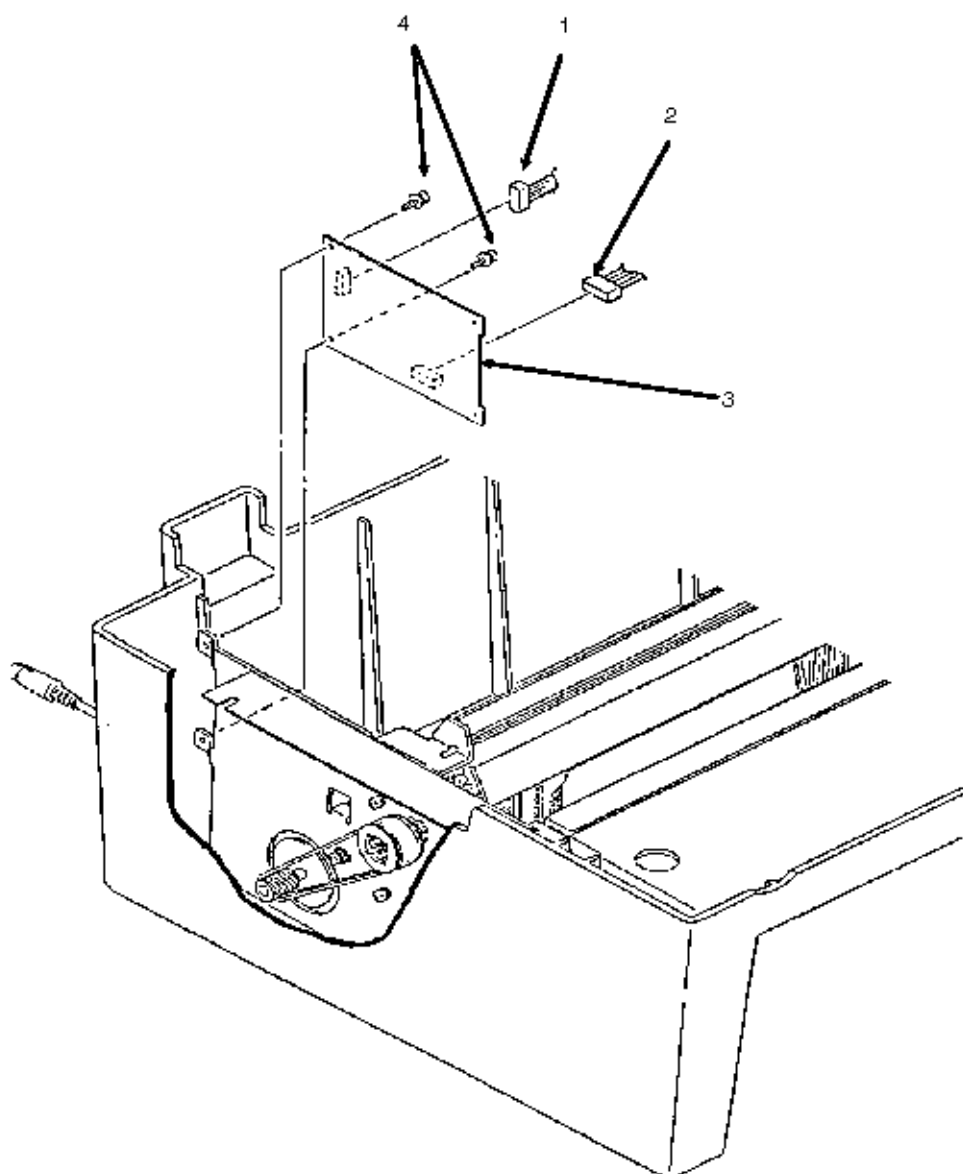
1. Detach the DIN connector (1).
2. Lift the printer unit (2) from the bottom tractor feed unit (3).



3.2.10 BTFD PCB

1. Remove the printer unit [\(3.2.09\)](#). 
2. Disconnect the connectors CN1 (1) and CN2 (2) on the BTFD PCB (3).
3. Remove the two mounting screws (4).
4. Remove the BTFD PCB.

P/N 55066101 PCB: BTFD (BTF) RSPL B.2.08 



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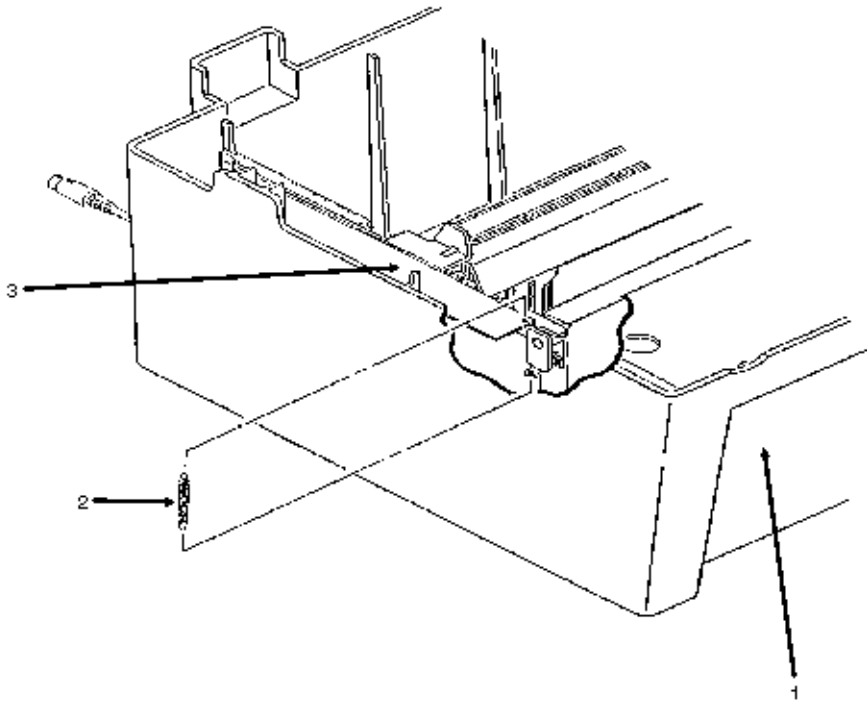
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3.2.11 Tension Spring

1. Remove the printer unit [\(3.2.09\)](#). 
2. Raise the front door assembly (1).
3. Detach the tension spring (2) from the upper plate (3).
4. Detach the tension spring from the front door assembly.

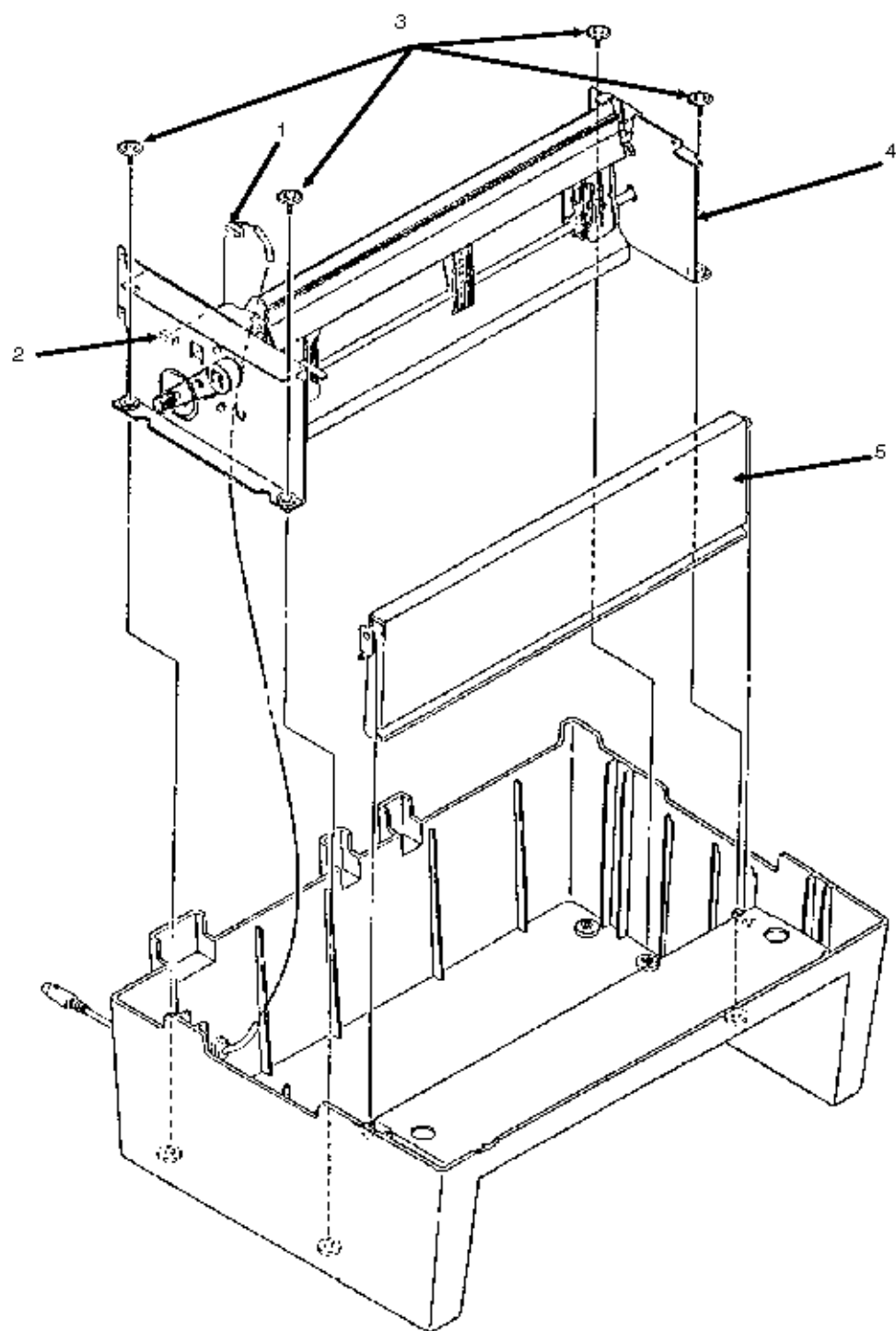
P/N 50922001 Spring: (BTF) RSPL B.2.08 



3.2.12 Bottom Push Mechanism and Front Door Assembly

1. Remove the printer unit [\(3.2.09\)](#). 
2. Remove the tension spring [\(3.2.11\)](#). 
3. Detach connector CN1 (1) on the BTFD PCB (2).
4. Remove the four screws (3).
5. Remove the bottom push mechanism (4).
6. Remove the front door assembly (5).

[P/N 53063701 Door: Front \(Assembly\) \(BTF\) RSPL B.2.08](#) 



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3.2.13 Drive Pulley and Belt

1. Remove the printer unit (3.2.09).
2. Remove the tension spring (3.2.11).
3. Remove the bottom push mechanism (3.2.12).
4. Loosen the two motor screws (1).
5. Push the motor (2) in the direction of Arrow A, to loosen the belt (3).
6. Remove the belt.
7. Pry open the claws in the center of the pulley, then remove the drive pulley (4) from the tractor feed drive shaft (5).

NOTES:

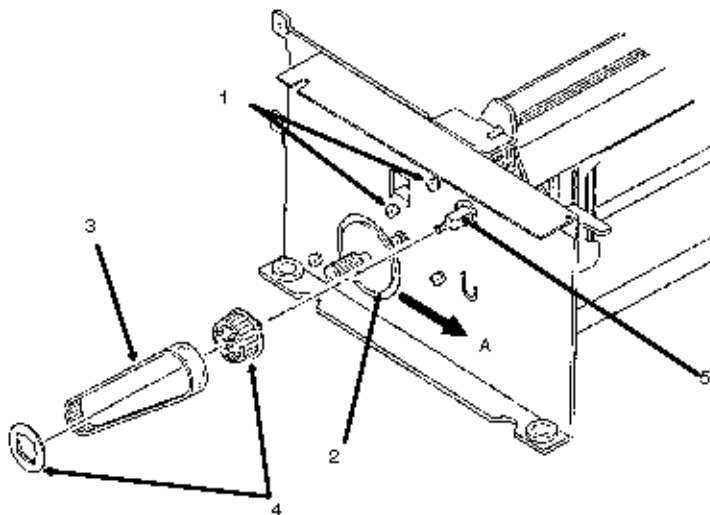
The drive pulley has two parts. Disassembly of the drive pulley is not required during this procedure.

Once the drive pulley has been removed, be sure that the tractor feed drive shaft is not removed. If you remove the tractor feed drive shaft, the left or right tractors will lose the synchronization between the pin feeds.

When assembling, perform the belt tension adjustment (3.3.02).

P/N 51226901 Pulley: Drive (BTF) RSPL B.2.08

P/N 51304501 Belt: Line Feed (BTF) Mini-Pitch [120 teeth] RSPL B.2.08



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3.2.14 Tractor Assembly (BTF)

NOTE:

On each side frame, the tractor drive shaft passes through a plastic bushing. These bushings should remain in the frame. However, if a bushing must be removed, press the bushings claw which can be accessed from the inside of the side frame.

1. Remove the drive pulley [\(3.2.13\)](#). 
2. Remove the tractor drive shaft (1) by sliding it to the right.
3. Rotate the tops of both the left (2) and right (3) tractor assemblies and the sheet guide (not shown) in the direction of Arrow A.
4. Lift the left side of the drive roller (4) and remove the drive roller, tractor assemblies, and sheet guide.

NOTES:

The sheet guide may be removed without disassembling the drive shaft.

When installing the tractor assemblies, take the following precautions:

Make sure that the tractors are synchronized by aligning the synchronization marks (5).

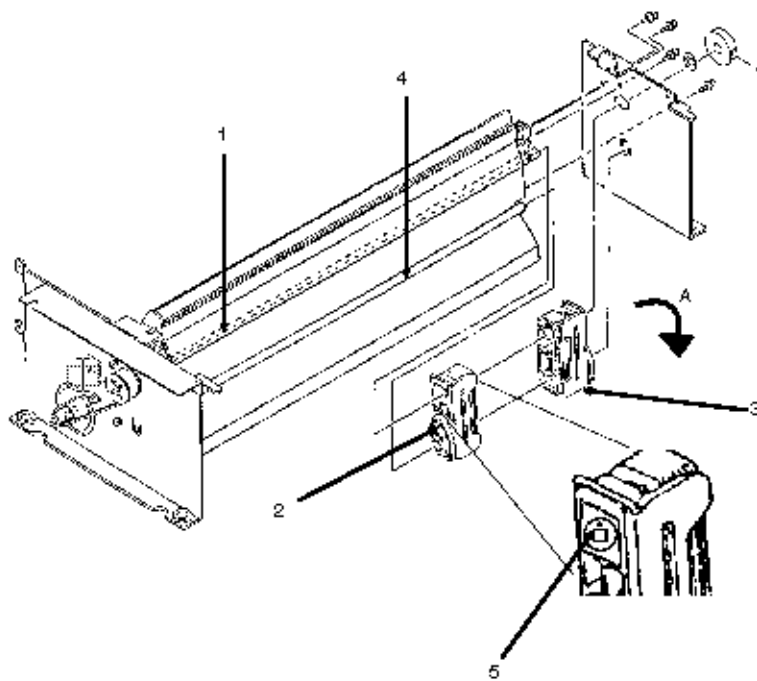
The left tractor assembly must be positioned to the left of the metal tab.

[P/N 50057401 Left Tractor Assembly RSPL B.2.08](#) 

[P/N 50057501 Right Tractor Assembly RSPL B.2.08](#) 

[P/N 51002201 Guide: Sheet \(BTF\) RSPL B.2.08](#) 

[P/N 53340401 Roller: Drive \(BTF\) RSPL B.2.08](#) 



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3.2.15 Line Feed Motor (BTF)

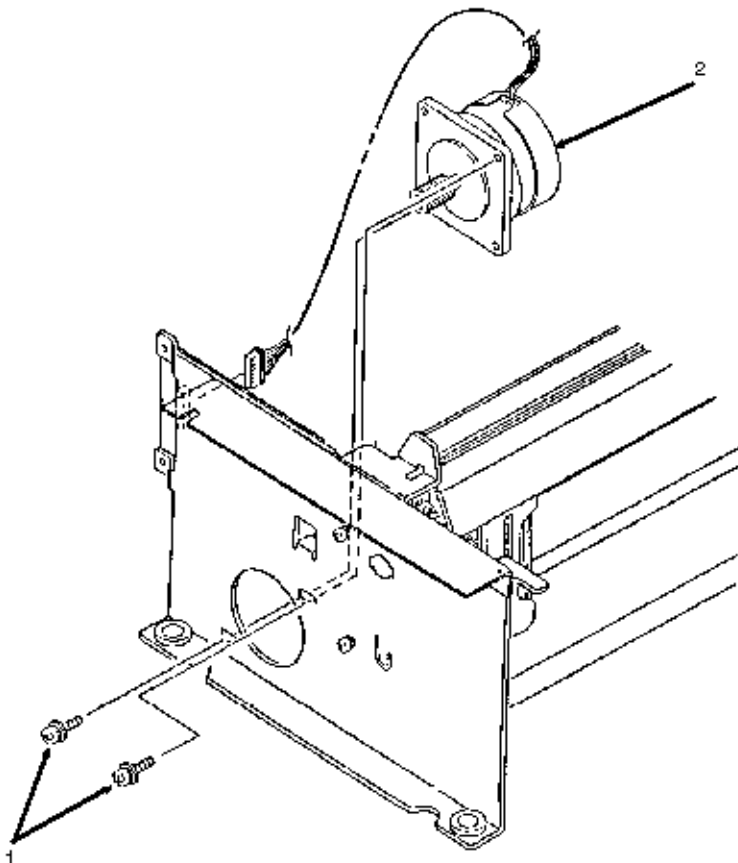
1. Remove the bottom push mechanism [\(3.2.12\)](#).
2. Remove the two screws (1).
3. Remove the line feed motor (2).

NOTE:

When installing the line feed motor, the harness should be oriented towards the top.

This line feed motor is used in two different places: the bottom push unit and the printer unit.

P/N 56509401 Motor: Line Feed (BTF) RSPL B.2.08





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3.2.16 Platen Assembly

1. Remove the printer mechanism [\(3.2.07\)](#). 
2. Loosen the three 7 mm line feed motor mounting bolts (1).
3. Move the line feed motor (2) closer to the platen (3) and detach the line feed drive belt (4).
4. Remove the E-ring, washer, spring and idle gear (5).
5. Remove the screw and detach the gear pulley, washer and bushing (6).
6. Remove the screw and detach the gear and bushing (7).
7. Push in the platen lever (8), lift the bail and remove the platen.

NOTE:

Perform the line feed belt tension adjustment after replacing the line feed drive belt. [Refer to Section 3.3](#)



Perform the printhead gap adjustment after installing the platen. [Refer to Section 3.3](#) 

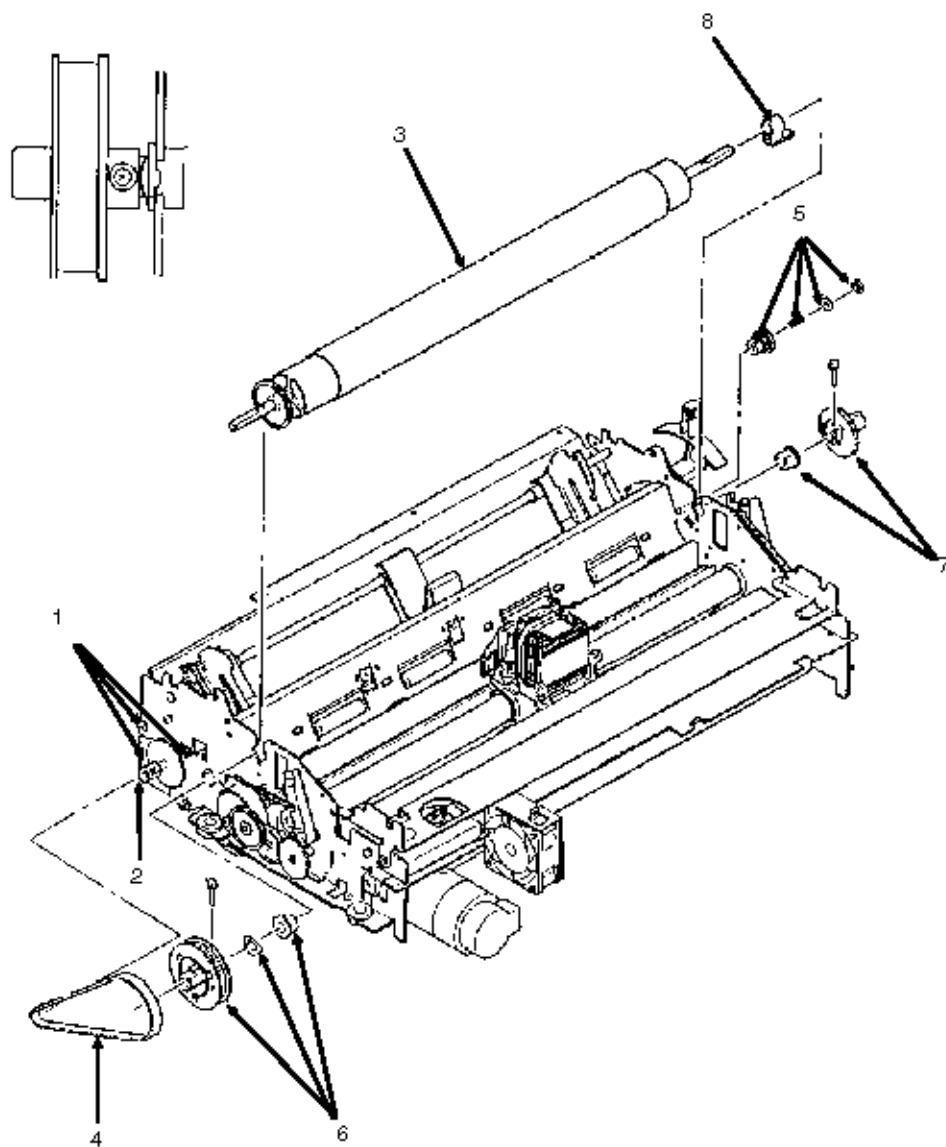
[P/N 50054101 Platen: \(Assembly\) RSPL B.2.06](#) 

[P/N 51214501 Gear: Platen "A" RSPL B.2.06](#) 

[P/N 51226801 Pulley: Platen RSPL B.2.06](#) 

[P/N 51304401 Belt: Mini Pitch \(Line Feed\) RSPL B.2.06](#) 

OLD P/N 50910305 Spring: Idle Gear



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3.2.17 Paper Pressure Guide

1. Remove the platen assembly [\(3.2.16\)](#) 
2. Remove the two paper chute springs (1) located on each side of the paper pressure guide (2).
3. Remove the screw (3), located on the left side frame of the printer mechanism, directly under the upper tractor shaft.
4. Remove the release lever detent spring (4) located on the right side frame of the printer mechanism.
5. Separate the claws and remove the release lever (5).
6. Remove the paper pressure bar (6) by sliding it to the right.
7. Using needle-nose pliers, squeeze the nylon latch (7) to release the paper out sensor wire harness (8).
8. Detach the cable from CN1 of the sensor board (9).
9. Lift the paper pressure guide and remove it.

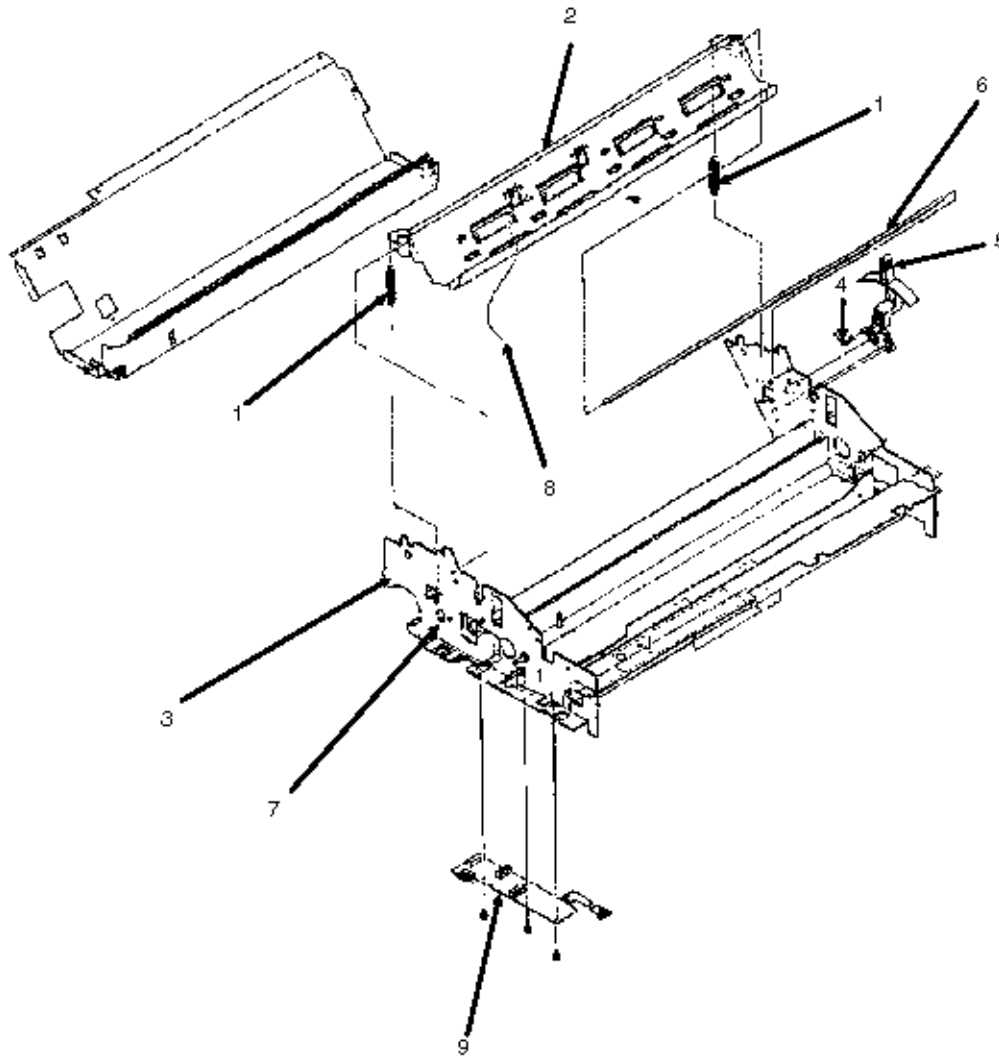
[P/N 50907502 Spring: \(Paper Chute\) RSPL B.2.06](#) 

[P/N 50910201 Spring: Detent \(Release Lever\) RSPL B.2.06](#) 

[P/N 53478706 Lever: Release RSPL B.2.06](#) 

[P/N 53478801 Block: Release Lever Guide RSPL B.2.06](#) 

[P/N 56625001 Cable: Cut Sheet Sensor Assembly RSPL B.2.06](#) 



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3.2.18 Line Feed Motor Assembly

1. Remove the printer mechanism (3.2.07) 
2. Remove the three mounting bolts and washers (1), then remove the line feed motor (2).

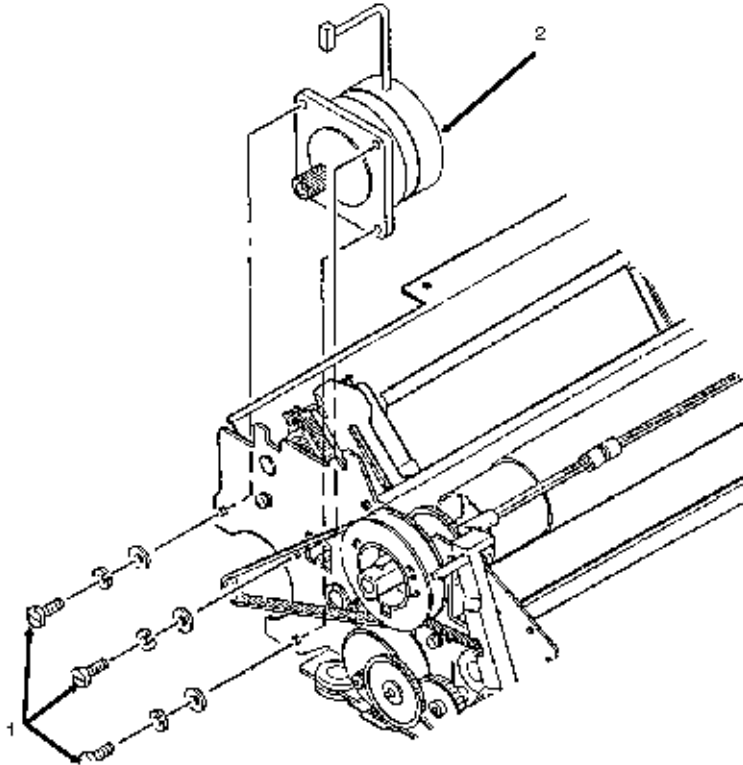
NOTES:

When installing the line feed motor, the cable should be positioned toward the top.

Adjust the line feed belt tension (3.3.02)  after installing the line feed motor.

This line feed motor is used in two different places: the bottom push unit and the printer unit.

P/N 56509401 Motor: Line Feed (BTF) RSPL B.2.06 

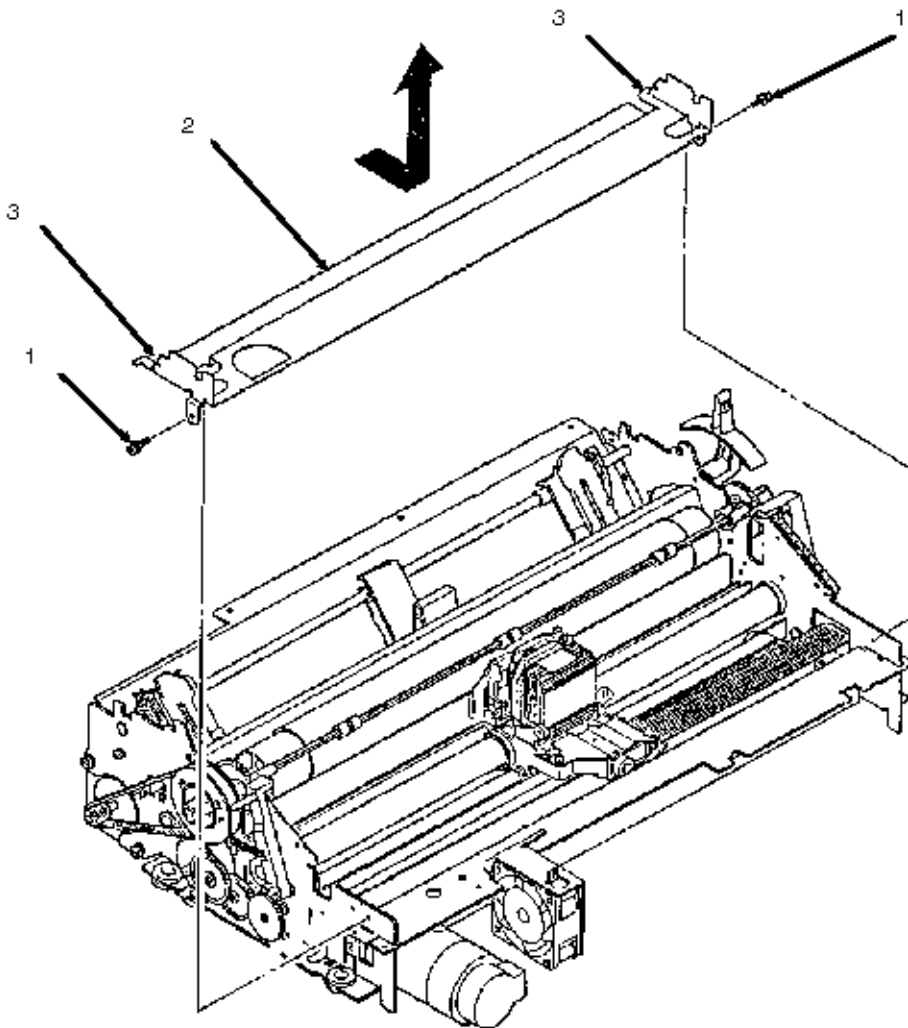


3.2.19 Ribbon Cartridge Bracket

1. Remove the printer mechanism (3.2.07) 
2. Remove the two ribbon cartridge bracket mounting screws (1).
3. Remove the ribbon cartridge bracket (2).

NOTE:

When assembling, the tabs (3) on each side of the ribbon cartridge bracket must slide into the slots on the printer mechanism.



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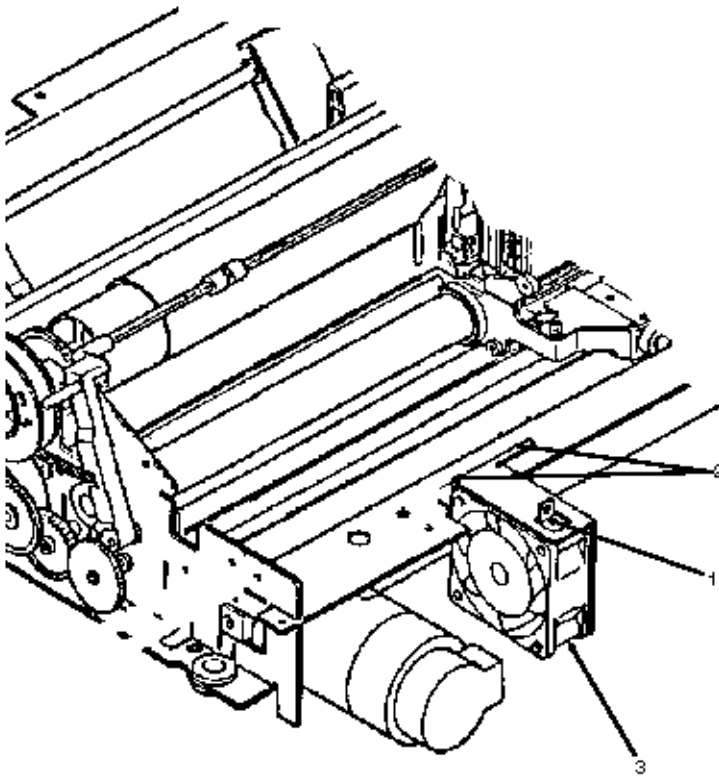
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3.2.20 Fan Assembly

1. Remove the ribbon cartridge bracket (3.2.19).
2. Using needle-nose pliers, squeeze the nylon latch (1) to release the space motor wire harness.
3. Remove the two fan mounting screws (2).
4. Remove the fan (3).

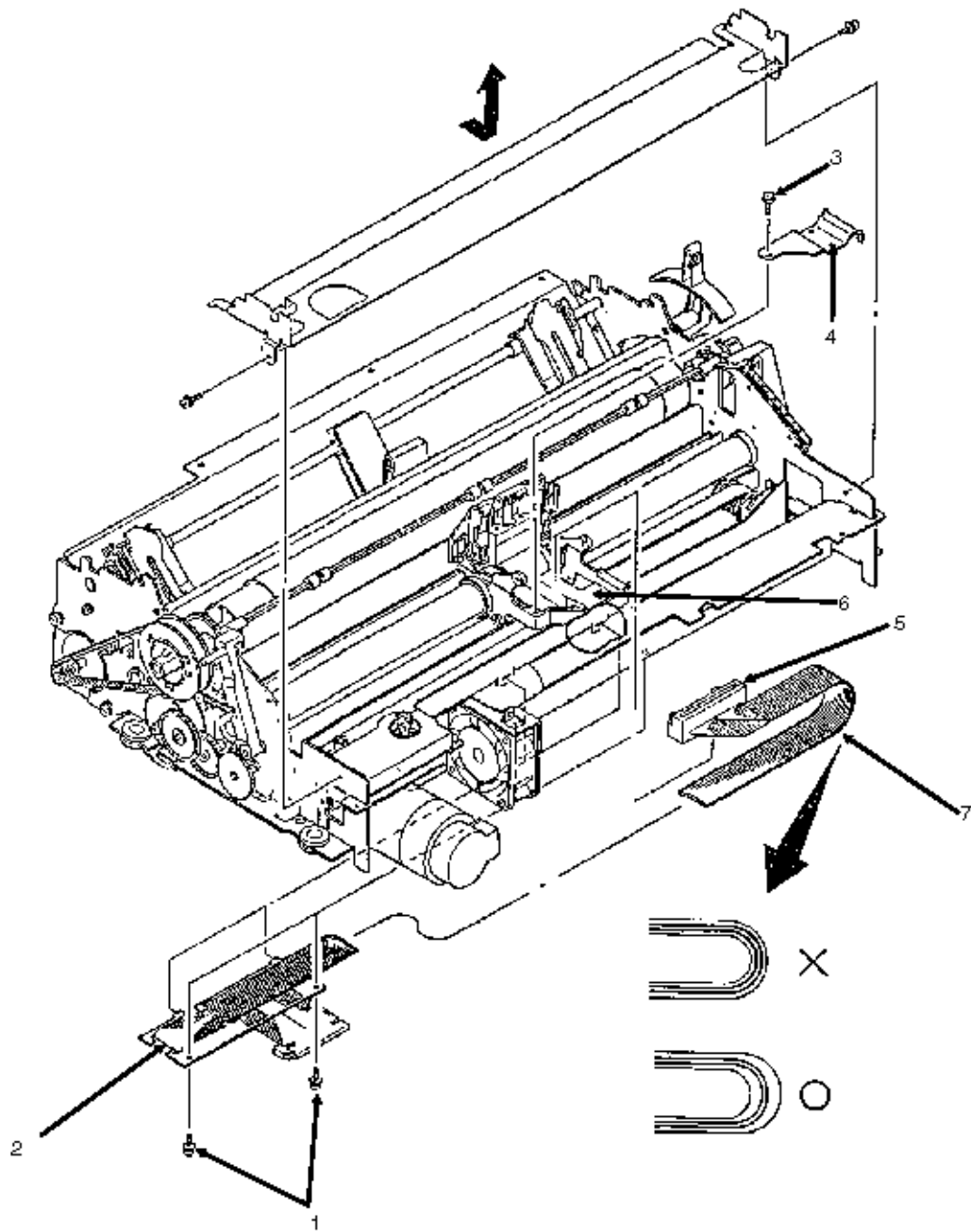
P/N 56509501 Fan: Cooling RSPL B.2.03



3.2.21 Head Cable Assembly

1. Detach the printhead [\(3.2.01\)](#) 
2. Remove the ribbon cartridge bracket [\(3.2.19\)](#) 
3. Loosen the two mounting screws (1), detach the tabs from the frame and remove the cable holder (2). The tabs must be accessed from the bottom of the printer mechanism.
4. Remove the mounting screw (3) and detach the connector clamp (4).
5. Detach the head cable connector (5) from the carriage frame (6).
6. Slide the carriage to the left side frame. While lifting the front end of the printer mechanism, remove the head cable assembly (7) by pulling downward.

[P/N 56624901 Cable: Head Assembly RSPL B.2.05](#) 



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3.2.22 Carriage and Carriage Shaft

1. Remove the head cable assembly [\(3.2.21\)](#) 
2. Loosen the slider mounting screw (1) and push it towards the back of the printer.
3. Remove the belt clamp mounting screw (2) and detach the belt clamp (3).
4. Loosen the screw (4) and detach the left printhead gap adjusting collar (5).

NOTE:

The protrusions on the collar face the outside of the printer.

5. Remove the screw and detach the blue printhead gap adjusting lever (not shown).
6. Loosen the screw (6) and detach the right printhead gap adjusting collar (7).
7. Pull the two rubber carriage bumpers (8) from the carriage shaft (9).
8. Slide the carriage shaft to the right and remove the shaft and the carriage assembly (10).

NOTES:*Installation*

Be sure that the larger extension at the end of the carriage shaft is positioned to the right.

Perform the printhead gap adjustment after installing this assembly. [Refer to Section 3.3](#) 

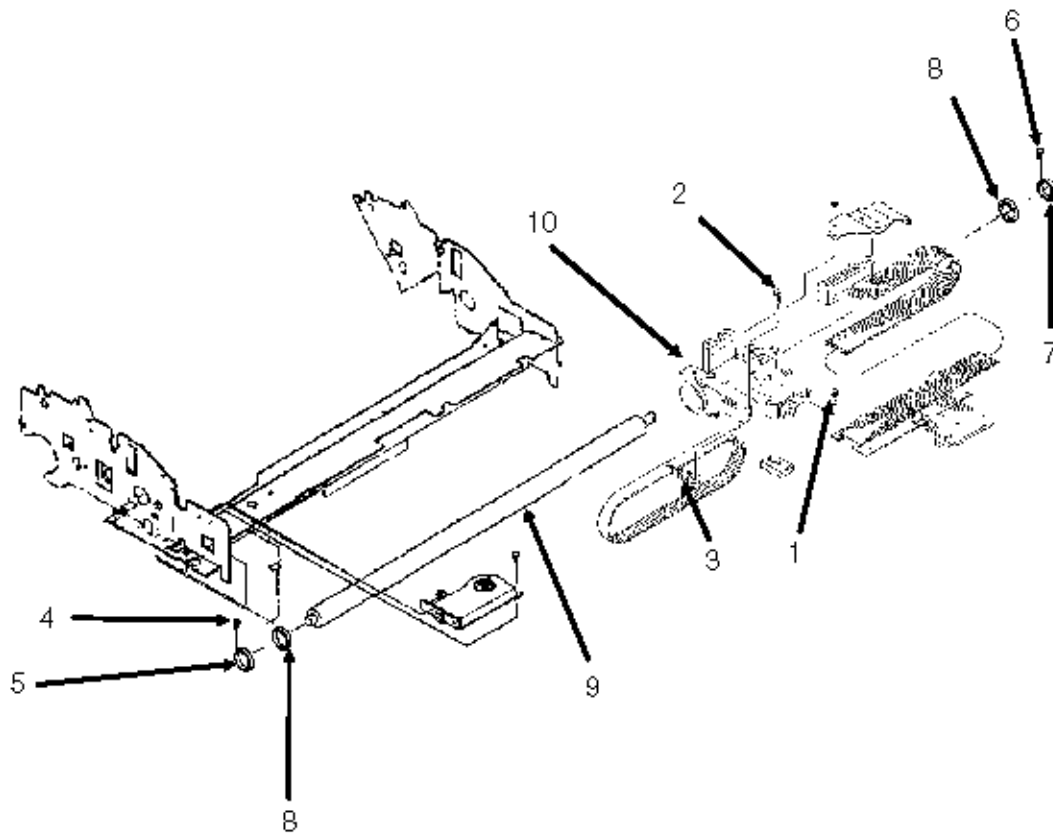
[P/N 53340501 Carriage: \(Assembly\) RSPL B.2.05](#) 

[P/N 50706701 Collar: Eccentric \(with Screw\) RSPL B.2.06](#) 

[P/N 51112101 Shaft: Carriage RSPL B.2.06](#) 

[P/N 53063801 Bracket: Printhead Gap Indicator RSPL B.2.06](#) 

[P/N 53478401 Lever: Adjust RSPL B.2.06](#) 



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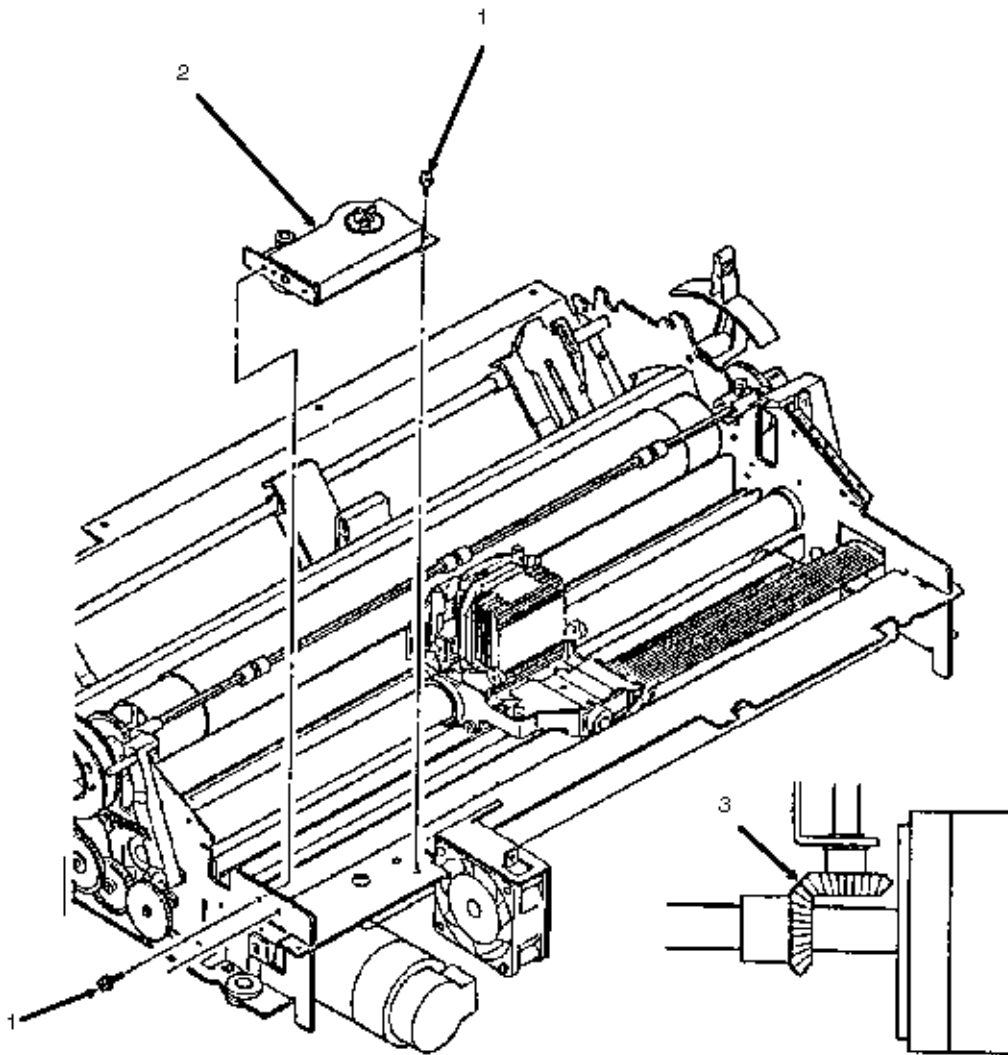
3.2.23 Ribbon Feed Assembly

1. Remove the ribbon cartridge bracket (3.2.19).
2. Remove the two mounting screws (1) and detach the ribbon feed assembly (2).

NOTE:

When assembling, install the ribbon drive assembly so that the gear backlash (3) is at a minimum.

P/N 50054301 Assembly: Ribbon Feed RSPL B.2.06

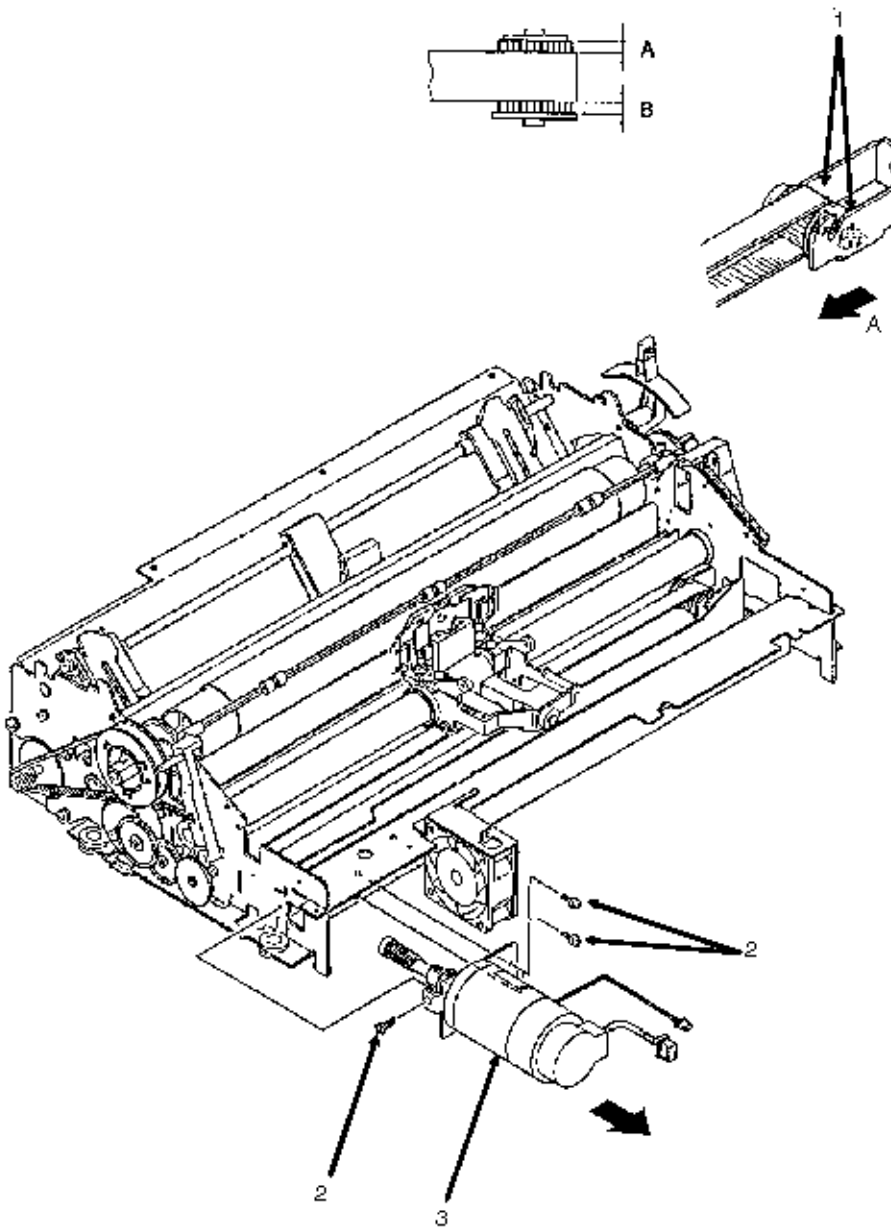


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3.2.24 Space Motor Assembly

1. Remove the ribbon feed assembly **(3.2.23)**. 
2. Loosen the two belt pulley bracket mounting screws (1). While pushing the belt pulley bracket to the left (A), temporarily tighten the two screws. This will ease the tension on the space belt.
3. Remove the three space motor mounting screws (2).
4. Remove the space motor (3) by pulling toward the front of the printer.

P/N 56506204 Motor: Space RSPL B.2.06 



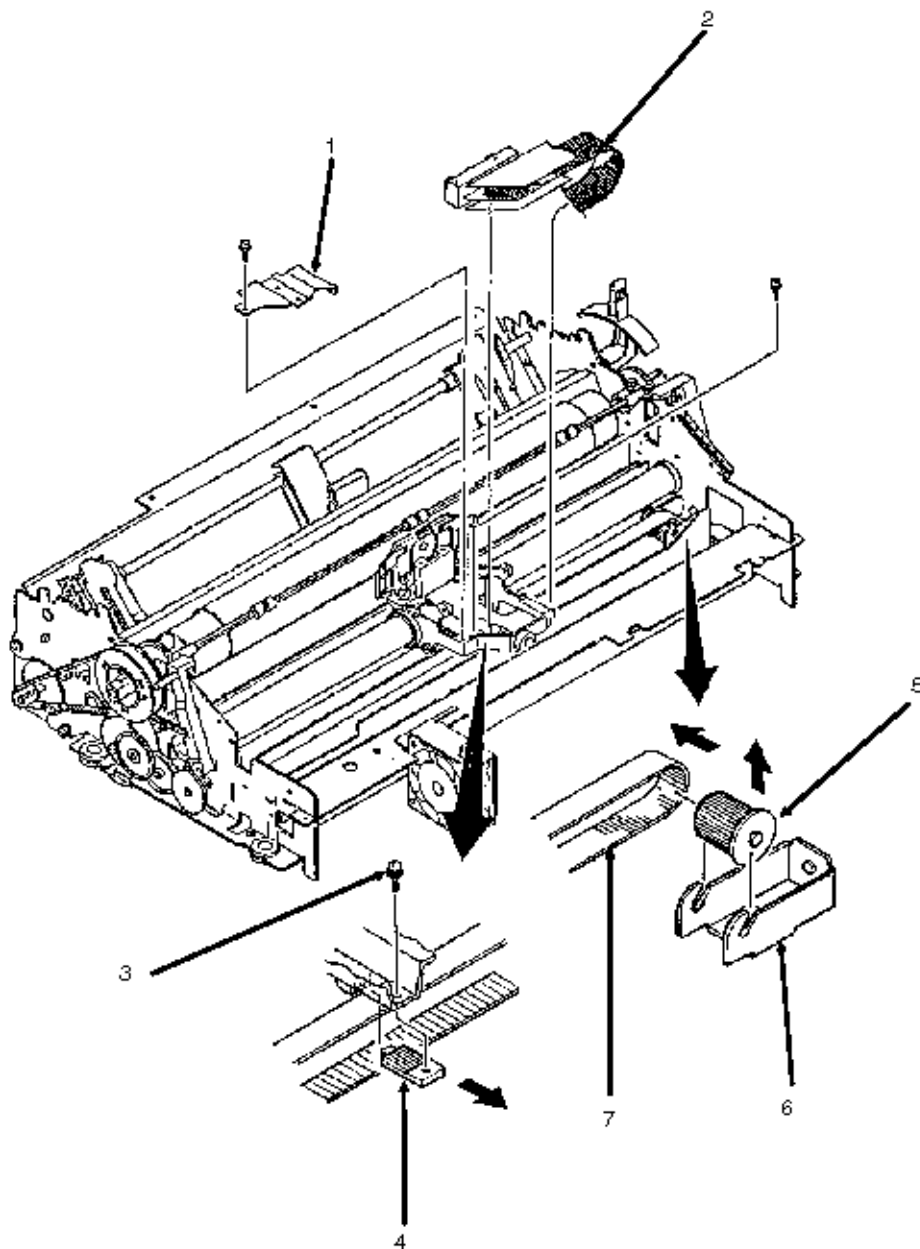
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3.2.25 Space Belt

1. Remove the printhead [\(3.2.01\)](#) 
2. Remove the space motor assembly [\(3.2.24\)](#) 
3. Remove the mounting screw and detach the connector clamp (1). Detach the head cable assembly (2) from the carriage.
4. Remove the mounting screw (3) and detach the belt clamp (4).
5. Remove the belt pulley (5) from the bracket (6) and detach the space belt (7).

[P/N 50702301 Belt Clamp B.2.05](#) 

[P/N 51303101 Belt: Mini Pitch \(Spacing\) RSPL B.2.05](#) 



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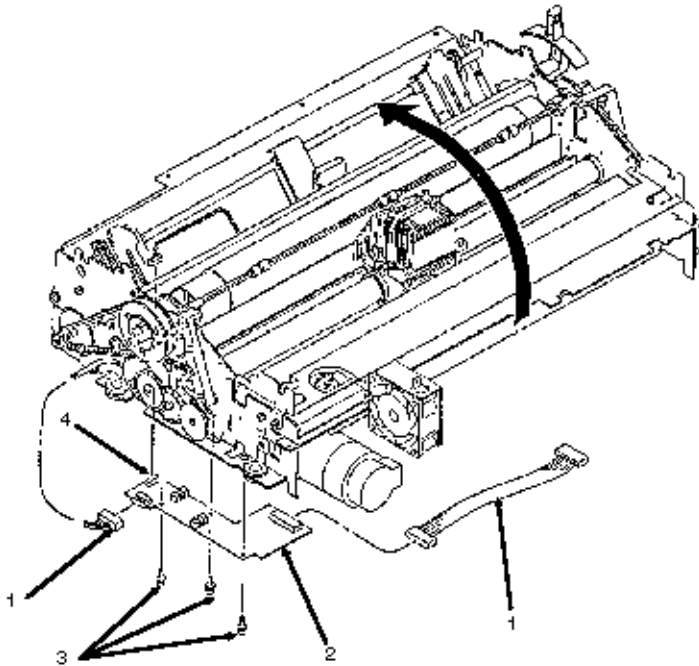
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3.2.26 Sensor Board (LPRW)

1. Remove the printer mechanism (3.2.07).
2. Disconnect connectors CN1 and CN2 (1) from the sensor board (2).
3. Raise the front of the printer mechanism.
4. Remove the three sensor board mounting screws (3).
5. Disconnect connector CN3 (4) and detach the sensor board.

P/N 55061501 PCB: LPRW Sensor RSPL B.2.06

P/N 56616804 Cable: Sensor Board Connection RSPL B.2.06





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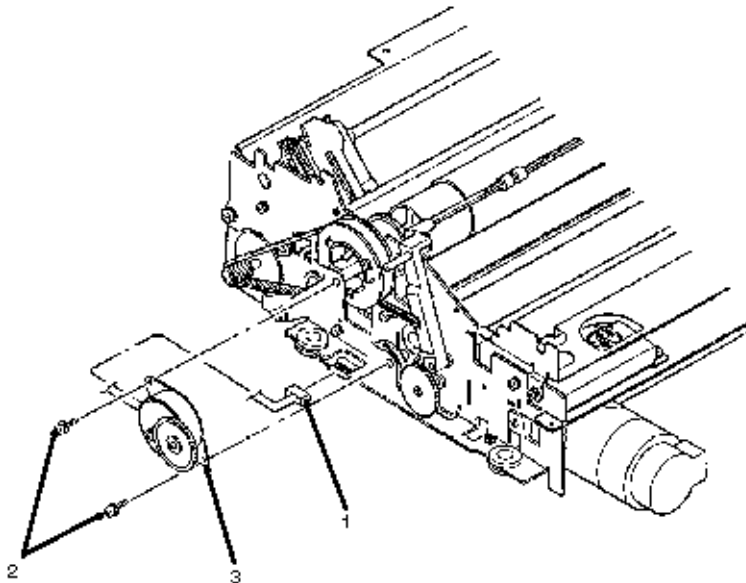
3.2.27 Bail Motor/Gear Assembly

1. Remove the printer mechanism (3.2.07). 
2. Disconnect connector CN2 (1).
3. Remove the two mounting screws (2) and detach the bail motor/gear assembly (3).

NOTE:

When assembling, install the bail/ribbon motor assembly so that the gear backlash is at a minimum.

P/N 56506301 Motor: Step (Bail Arm) Assembly RSPL B.2.06 



3.2.28 Paper Bail Assembly

1. Remove the printer mechanism [\(3.2.07\)](#) 
2. Remove the bail motor / ribbon gear assembly [\(3.2.27\)](#) 
3. Detach the paper bail springs (1).

NOTE:

The right and left bail arm springs are different; be careful to install them properly. 4. Remove the idler gear (2).

5. Detach the E snap ring and remove the bail open cam (3).
6. Detach the E snap ring (4) and remove the left bail arm (5) from the paper bail bar (6) by pulling toward the left.
7. Remove the right bail arm (7) by pulling toward the right while expanding the clamps (8).
8. Detach the right bail arm from the paper bail bar.

[P/N 50054401 Assembly: Indicator Shaft RSPL B.2.07](#) 

[P/N 50910701 Spring: Bail Arm \(Left\) RSPL B.2.07](#) 

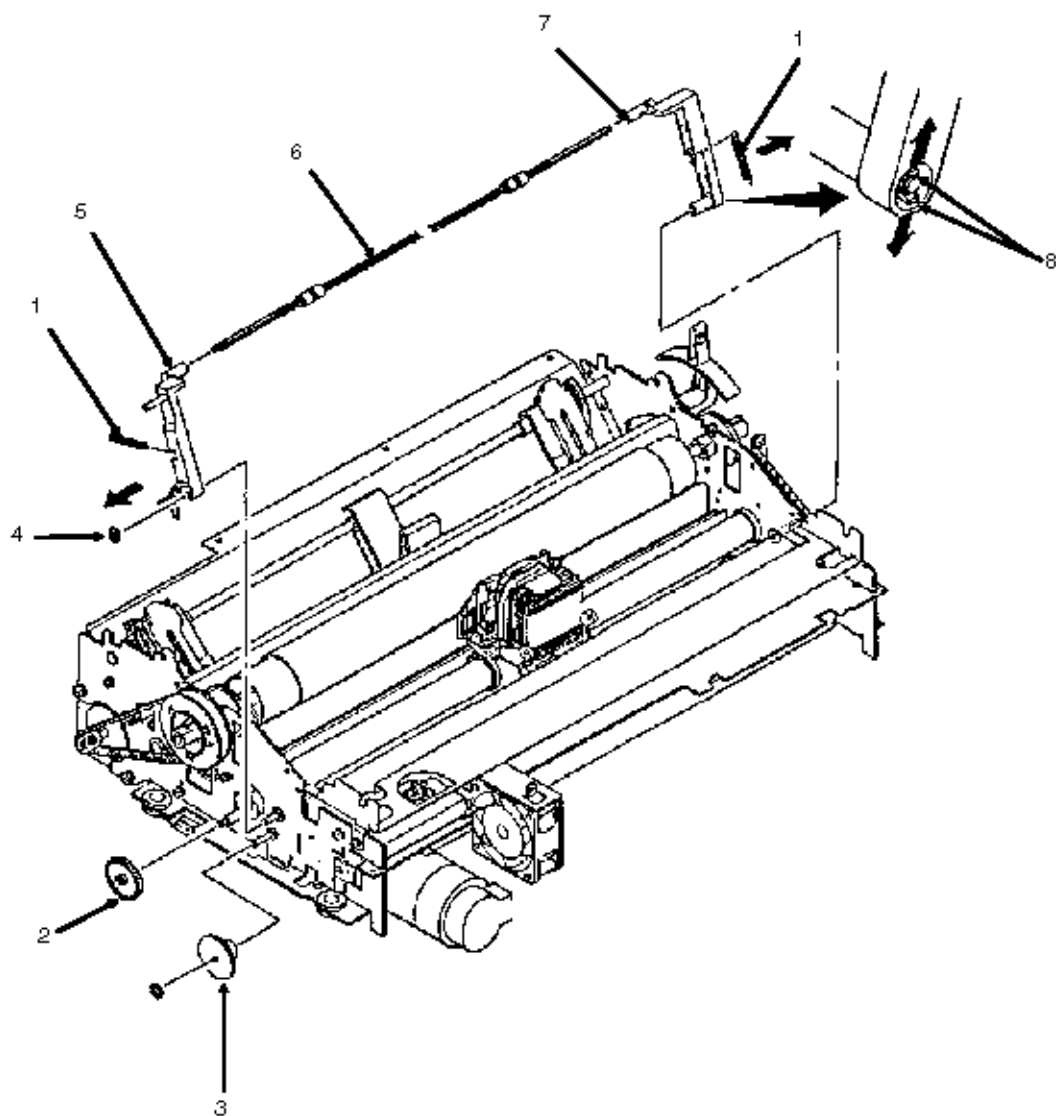
[P/N 50910801 Spring: Bail Arm \(Right\) RSPL B.2.07](#) 

[P/N 51210201 Gear: Idle \(Bail Arm\) RSPL B.2.07](#) 

[P/N 51214701 Cam: Bail Open RSPL B.2.07](#) 

[P/N 53478501 Bail Arm \(Left\) RSPL B.2.07](#) 

[P/N 53478502 Bail Arm \(Right\) RSPL B.2.07](#) 



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3.2.29 Rear Feed Tractor Assembly

1. Remove the printer mechanism [\(3.2.07\)](#) .
2. Remove the lower center guide (1).
3. Separate the claws (2) and remove the two drive gears from the right side of the printer mechanism (3A - Drive Gear A and 3B - Drive Gear B).
4. Using a needle nose pliers, remove the nylon cable clamp (4).
5. Slide the upper drive shaft (5) to the left and remove it.
6. Slide the lower drive shaft (6) to the left and remove it.
7. Remove the upper center guide (7), being careful not to lose the friction ring (8).
8. Lift and remove the push tractor assemblies (9) and locking shaft (10).

NOTES:

To remove the tractors , raise the lock levers and slide the tractors off.

When installing the push tractor assembly, take the following precautions: 9. First, install the friction ring in the upper center guide. If the upper center guide moves easily along the locking shaft, you must rotate the friction ring 45 degrees, using a standard screwdriver (11).

10. Check the installation; if the guide moves with difficulty, it is properly installed.
11. Make sure that the tractors are synchronized by aligning the synchronization marks in the same direction.
12. Make sure that the guide holes (12) in the tractor drive gears face the same direction.
13. The groove of the upper center guide must be positioned behind the paper pressure guide (13).
14. The left tractor assembly must be positioned between the two guide tabs (14).

[P/N 50054501 Tractor: Push \(Left\) Assembly RSPL B.2.07](#) 

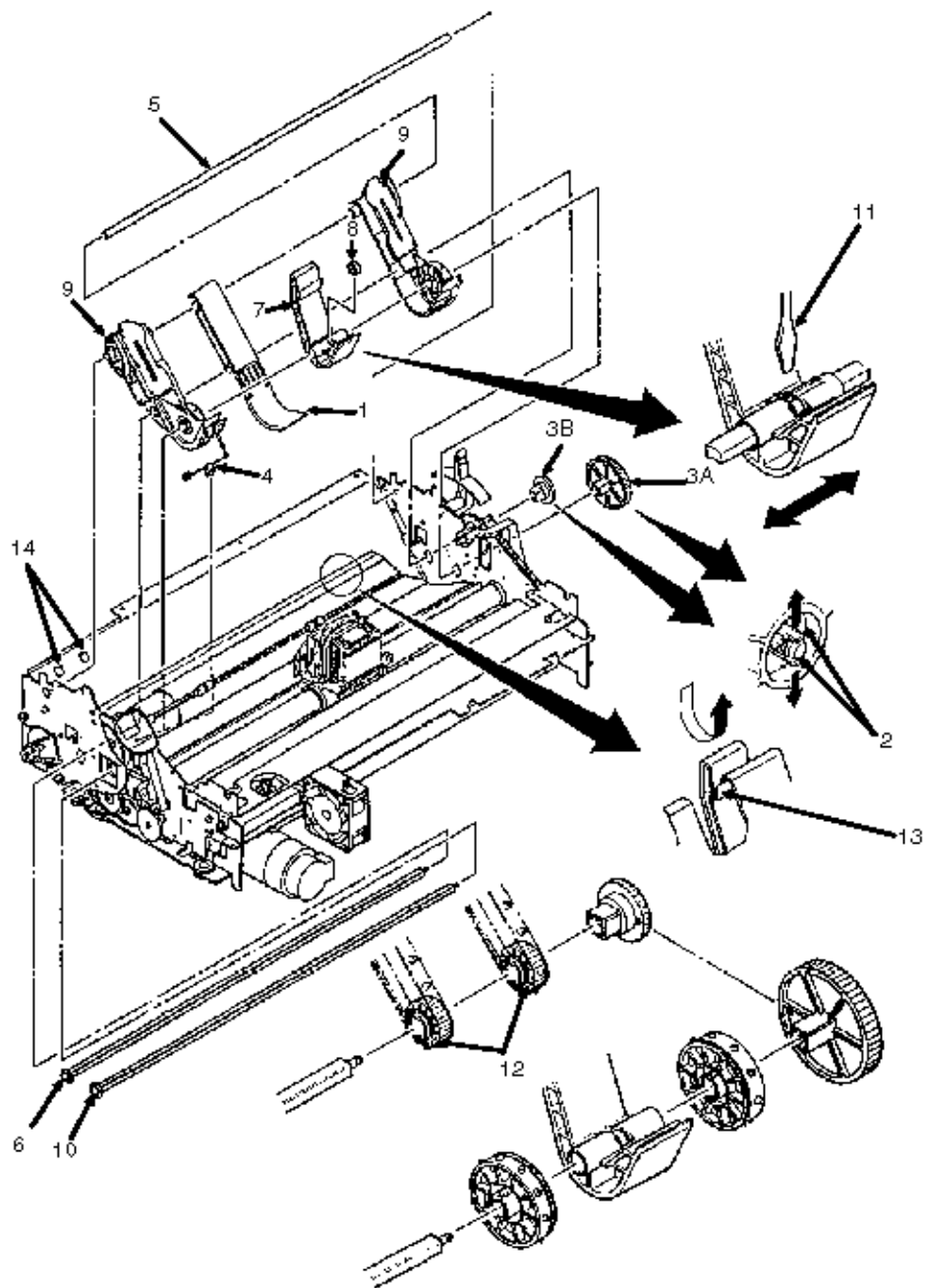
[P/N 50054601 Tractor: Push \(Right\) Assembly RSPL B.2.07](#) 

[P/N 51002301 Friction: Piece RSPL B.2.07](#) 

[P/N 51002401 Guide: Center - Upper RSPL B.2.07](#) 

[P/N 51002501 Guide: Center Lower A RSPL B.2.07](#) 

[P/N 51002601 Guide: Center Lower B RSPL B.2.07](#) 



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3.2.30 Printhead Gap/Release Lever Microswitches

1. Remove the printer mechanism. [\(3.2.07\)](#) 
2. Remove the mounting screw to remove the release lever microswitch (1).
3. Push down on the mounting tab and detach the upper printhead gap microswitch (2).
4. Push down on the mounting tab and detach the lower printhead gap microswitch (3).
5. Using a needle nose pliers, detach the nylon cable clamp (4) and remove the harness and switches from the printer mechanism.

NOTES:

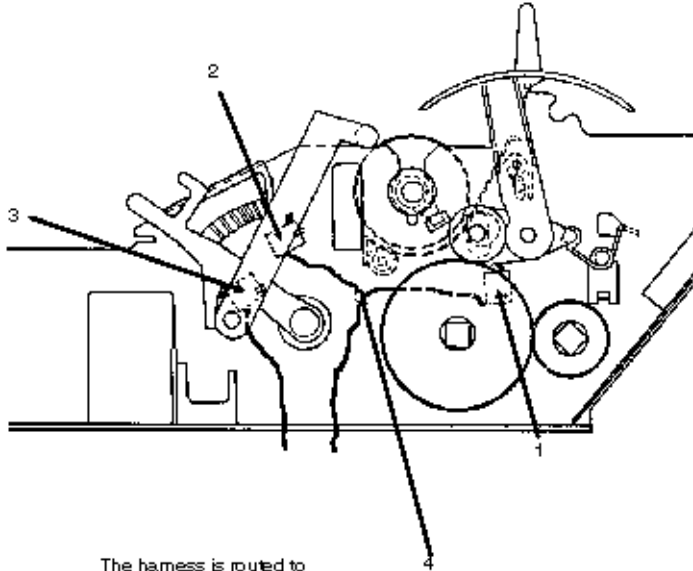
The harness connector must be detached from the main logic board.

Refer to the Microswitch 2 Modification procedure in Section 3.3 - Adjustments. 

P/N 56209901 Switch: Micro (Adj & Rel Lever) RSPL B.2.07 

P/N 56624801 Cable: Micro Switch Assembly (Adj & Rel Lever) RSPL B.2.07 

P/N 56614301 Cable: Micro Switch (Cover Open) RSPL B.2.04 



The harness is routed to
the main logic board.



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3.2.31 Release Lever / Gear Assemblies

6. Remove the printer mechanism [\(3.2.07\)](#). 

NOTE:

Before performing the next step, place the release lever toward the front of the printer. This will remove tension from the detent spring.

7. Detach the E-Ring, washer and spring, then remove the idle gear (1).

8. Remove the (Release Lever) detent spring (2).

9. Pry open the center claws and slide the release lever (3) from the printer mechanism.

10. Pry open the center claws then remove drive gear A (large gear) (4).

11. Pry open the center claws then remove drive gear B (small gear) (5).

[P/N 50910305 Spring: Idle Gear RSPL B.2.07](#) 

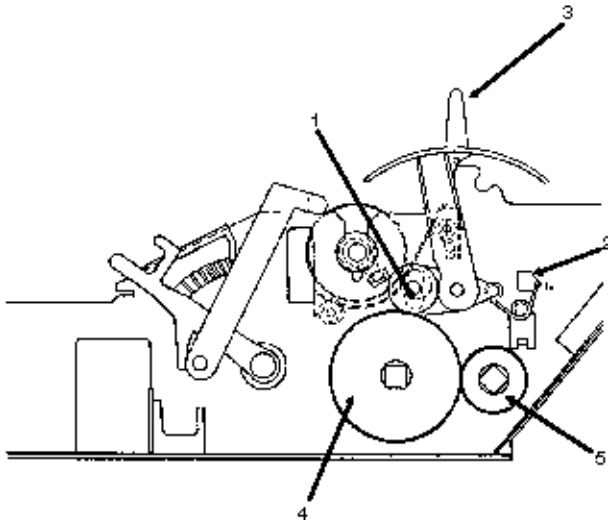
[P/N 51214201 Gear: Drive A RSPL B.2.07](#) 

[P/N 51214301 Gear: Drive B RSPL B.2.07](#) 

[P/N 51214401 Gear: Idle \(Release Lever\) RSPL B.2.07](#) 

[P/N 53478706 Lever: Release RSPL B.2.06](#) 

[P/N 50910201 Spring: Detent \(Release Lever\) RSPL B.2.06](#) 





3.3 PRINTER ADJUSTMENTS

3.3.01 General Information

This section contains the procedures for performing adjustments on the printer. These procedures may be required when replacing either consumables or parts. The disassembly / assembly procedures list the required adjustment and refer you to this section. Failure to perform these procedures may result in unnecessary service calls.

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3.3.02 Printhead Gap

NOTES:

The information in this section is also covered in Technical Service Bulletin 1603. A Pacemark 3410 Replacement Printhead Kit includes the items listed below.

Technical Service Bulletin 1603

Read Me First Card

Head Gap Lever Adjustment Sticker

90 Day Warranty Extension Card

General Information

Before performing this adjustment, always verify that the printhead is properly installed.

The printhead gap adjustment should be performed when the following occur.

- Print quality is darker on one side of the document.
- Parts / Assemblies are replaced.

Printhead Assembly [\(3.2.01\)](#)

Platen Assembly [\(3.2.16\)](#)

Carriage Shaft [\(3.2.22\)](#)

The printhead gap should measure .014 +/- .002 inches (0.35 +/- 0.05 millimeters).

This adjustment has four phases.

1. Setup Phase (Steps 1 - 6)

The cover is removed and the printhead is placed at a known reference point.

2. Printhead Gap Modification Phase (Steps 7 - 9)

The distance between the printhead and the platen at the left (line feed motor) side of the platen is modified by rotating the left eccentric collar. Rotating the eccentric collar varies the position of the carriage shaft relative to the platen.

3. Parallel Adjustment Phase (Steps 10 - 12)

The right eccentric collar is rotated to ensure that the printhead moves parallel to the platen (at the correct gap setting).

4. Check Phase (Steps 13 - 16)

This phase verifies that the Parallel Adjustment Phase did not affect the Printhead Gap Modification Phase.

Procedure

NOTE:

The printhead gap must measure .014 +/- .002 inches (0.35 +/- 0.05 millimeters).

Setup Phase (Steps 1 - 6)

1. Remove the ribbon cartridge and ribbon guide (3.2.01).
2. Remove the ribbon protector (3.2.02).
3. Remove the upper cover (3.2.03).
4. Set the printhead gap lever to position 1.
5. Set the release lever to the CUT SHEET ("OPEN") position.
6. Loosen the left and right eccentric collar mounting screws.

Printhead Gap Modification Phase (Steps 7 - 9)

7. Move the printhead to the left side of the platen.
8. Rotate the left eccentric collar until the correct gap is obtained.
9. Move the printhead to the right side of the platen.

Parallel Adjustment Phase (Steps 10 - 12)

10. Rotate the right eccentric collar until the correct gap is obtained.
11. Move the printhead to the left side of the platen.
12. Recheck the gap, rotating the left eccentric collar as necessary.

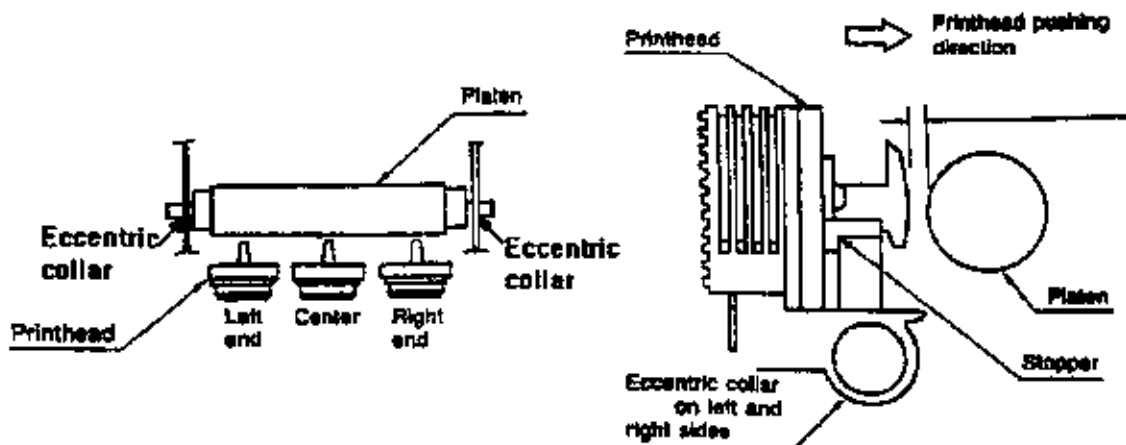
Check Phase (Steps 13 - 16)

13. Move the printhead to the right side of the platen.
14. Check the gap, rotating the right eccentric collar as necessary.
15. Repeat Steps 11 - 14 until the correct gap is obtained at each side of the platen.
16. Move the printhead to the center of the platen and check the gap.
17. When the correct gap has been attained, tighten the left and right eccentric collar mounting screws.
18. Install the upper cover, the ribbon protector, ribbon guide and the ribbon cartridge.

NOTE:

When installing the printhead, push it towards the platen. This ensures a correct fit between the printhead and stopper. Then, tighten the printhead screws.

Diagram



Microswitch 2 Modification

NOTES:

The information in this section is also covered in Technical Service Bulletin 1603.

A Pacemark 3410 Replacement Printhead Kit includes the items listed below.

TSB 1603

Read Me First Card

Head Gap Lever Adjustment Sticker

90 Day Warranty Extension Card

General Information

Modifying Microswitch 2 will reduce drive time and increase printhead life.

Perform this modification when a replacement printhead is installed.

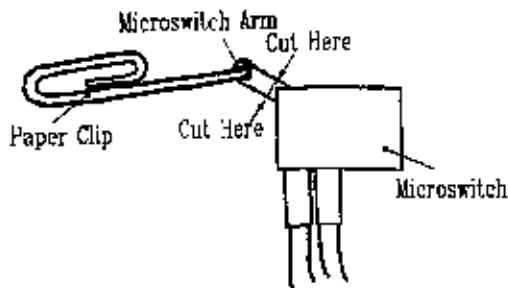
Procedure

1. Remove the upper cover. [\(3.2.03\)](#) 
2. Locate the blue head gap lever.
3. Set the blue head gap lever to Position 1.
4. Locate the two microswitches on the right side (platen knob) of the printer. The microswitch below the head gap lever is Microswitch 2.
5. Make a paper clip into a hook.
6. Insert the paper clip hook into the small hole on the microswitch arm.

CAUTION:

The paper clip hook will keep the arm from falling into the printer during the next step.

7. Hold the paper clip and carefully cut the arm of Microswitch 2 at its base.
8. Discard the cut arm.



Verification

To verify that Microswitch 2 has been disabled, follow this procedure.

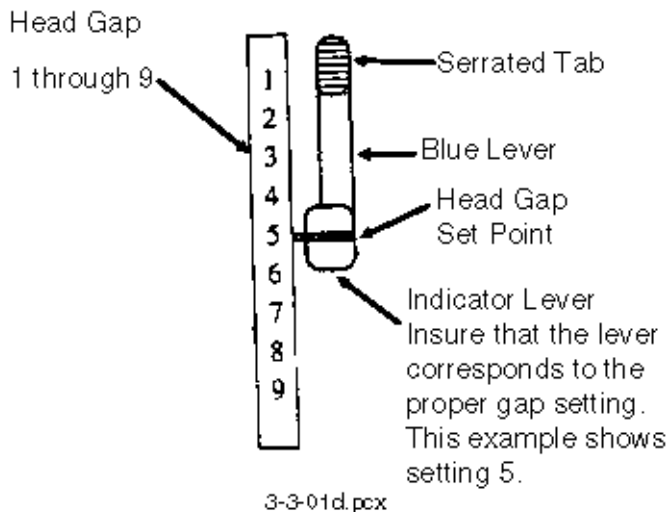
1. Set the head gap lever to position 5 or above.
2. Attach an ohmmeter to pins 5 and 6 of connector CN9 on the main control board.
3. Verify that the switch is closed.
4. Set the head gap lever to the proper setting for the paper (thickness) being used.
5. Replace the upper cover.

6. Place the Head Gap Lever Adjustment Sticker on the tear bar of the access cover.
7. Fill out the Customer Warranty Extension Card (if applicable).

Read Me First

The Read Me First Sheet in the Pacemark 3410 Replacement Printhead Kit reads as follows.

When changing paper paths or paper type, be sure to adjust the printhead gap lever. This blue lever is located on the right hand side of the printer. Failure to correctly adjust this lever could result in damage to the printhead.



Key Combination	Function
PRINT QUALITY + CHARACTER PITCH (Either during ON-LINE or hold during power ON)	Menu Mode
SELECT + FORM FEED (Hold during power ON)	Activates Hexadecimal Dump Mode
SELECT + LINE FEED (Hold during power ON)	Resets Printer Menu to factory defaults
SELECT + TOP OF FORM (Hold during power ON)	Resets Printer Menu and Top of Form to factory defaults
LINE FEED (Hold during power ON)	Activate Font Test To end Font Test press SELECT
FORM FEED (Hold during power ON)	Activate Rolling ASCII Test To end Rolling ASCII Test press SELECT

90 Day On-Site Warranty Extension

The 90 Day On-Site Warranty Extension in the Pacemark 3410 Replacement Printhead Kit reads as

follows.

This document entitles the owner an extension of the initial 90 day on-site warranty.

The extension will cover any printhead repair performed within the first 90 days after the date of purchase and extend the warranty for 90 days from the date of the printhead repair.

Any Authorized Pacemark 3410 Okidata Repair Center will honor this extension when properly dated and signed by a certified repair technician. Please retain this for your records.

Date of Purchase: _____ Printer Serial Number _____

Date of Printhead Repair _____ 90 Day Extension Expiration Date _____

Authorized Okidata Repair Center _____ Dealer Number _____

Technician Name _____ Technician Signature _____

Customer's Name and Address _____

ODA P/N 58084801

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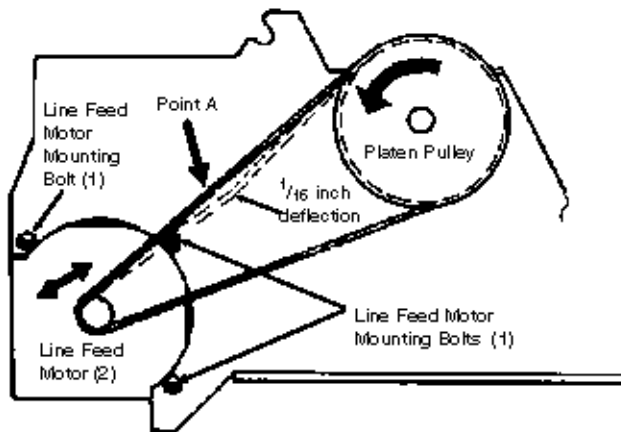
3.3.02 Line Feed Belt Tension

1. Loosen the three line feed motor mounting bolts (1).
2. Using a tension gauge, apply .5 pounds of pressure at Point A.

NOTE:

Rotate the platen pulley at least once before making the adjustment

3. Adjust the line feed motor (2) position to obtain a 1/16 inch deflection as shown.
4. Tighten the three mounting bolts.





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3.3.03 Key Combinations Table

Key Combination	Function
PRINT QUALITY + CHARACTER PITCH (Either during ON-LINE or hold during power ON)	Menu Mode
SELECT + FORM FEED (Hold during power ON)	Activates Hexadecimal Dump Mode
SELECT + LINE FEED (Hold during power ON)	Resets Printer Menu to factory defaults
SELECT + TOP OF FORM (Hold during power ON)	Resets Printer Menu and Top of Form to factory defaults
LINE FEED (Hold during power ON)	Activate Font Test To end Font Test press SELECT
FORM FEED (Hold during power ON)	Activate Rolling ASCII Test To end Rolling ASCII Test press SELECT

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3.3.04 Menu Operation

General Description

The Menu is used to customize the printers settings and features.

The Menu is made up of a number of groups.

Each group has a list of items.

Each item has several settings.

Menu Mode

To enter Menu Mode, follow this procedure.

1. Verify that continuous feed paper is installed.
2. Verify that the ribbon is correctly installed.
3. Verify that the width of the installed paper matches the paper width menu setting.
4. Press PRINT QUALITY and CHARACTER PITCH at the same time to place the printer in Menu Mode.

When in Menu Mode, the functions printed *below* the operator panels switches are active.

5. Press GROUP until the desired Group prints.
6. Press ITEM until the desired Item prints.
7. Press SET until the desired setting prints.
8. Press EXIT to save the change and exit Menu Mode.

Printing the Menu

Printing the Menu provides a reference of current settings.

This will help you move through the menu.

Okidata **STRONGLY RECOMMENDS** printing the Menu *before* resetting the Menu to factory defaults.

To print the Menu, follow this procedure.

1. Verify that continuous feed paper is installed.
2. Verify that the ribbon is correctly installed.
3. Verify that the width of the installed paper matches the paper width menu setting.
4. Power ON the printer.
5. Press and hold PRINT QUALITY and CHARACTER PITCH at the same time to place the printer in Menu Mode.

When in Menu Mode, the functions printed *below* the operator panels switches are active.

6. Press PRINT.
7. The Menu will print.
8. Press EXIT to exit Menu Mode.

Reset Menu to Factory Defaults

To reset the Menu to Factory Defaults, follow this procedure.

1. Before resetting the Menu, Okidata **STRONGLY RECOMMENDS** printing the Menu.

Printing the Menu provides a reference of customized settings.

When the Menu is reset, all customized setting are LOST.

2. Power OFF the printer.
3. Press and hold SELECT and LINE FEED while powering ON the printer.

Reset Menu and Top of Form to Factory Defaults

To reset the Menu and the Top of Form to Factory Defaults, follow this procedure.

1. Before resetting the Menu, Okidata **STRONGLY RECOMMENDS** printing the Menu.

Printing the Menu provides a reference of customized settings.

When the Menu is reset, all customized setting are LOST.

2. Power OFF the printer.
3. Press and hold SELECT and TOP OF FORM while powering ON the printer.

Limited Operation

In the Printer Menu, the fifth item in the Set-Up Group is Operator Panel Function.

The settings for this Item are Full Operation and Limited Operation. The factory default is Full Operation.

A system manager may use this feature to maintain proper print settings if the printer is part of a customized system or if the printer is used by different operators.

When the Printer Menu is set to Limited Operation, the TOP OF FORM, MICRO FEED UP/DOWN, PRINT QUALITY, and PITCH switches of the operator panel **DO NOT** work. Menu Mode **CANNOT** be accessed.

To change from LIMITED OPERATION to FULL OPERATION, follow this procedure.

1. Verify that continuous feed paper is installed.
2. Verify that the ribbon is correctly installed.
3. Verify that the width of the installed paper matches the paper width menu setting.
4. Power OFF the printer.
5. Press and hold PRINT QUALITY and CHARACTER PITCH while powering ON the printer to place the printer in Menu Mode.

When in Menu Mode, the functions printed *below* the operator panels switches are active.

6. Press GROUP until Set-Up prints.
7. Press ITEM until Operator Panel Function prints.
8. Press SET until FULL OPERATION prints.
9. Press EXIT to exit Menu Mode.



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Menu Settings

Factory default settings are printed in ***Bold Italic***.

Except as indicated, the menu for the Epson/IBM model is the same as the menu for the ML/Pacemark model.

Group	Item	Setting	Notes
Printer Mode	Emulation Mode (Epson/IBM)	<i>Epson FX</i> IBM PPR	Refer to the Printer Handbook
	Emulation Mode (ML/Pacemark)	Microline Pacemark 2410	Refer to the Printer Handbook
Font	Print Mode	<i>Utility</i> NLQ Courier NLQ Gothic HSD	
	Pitch (Epson / IBM)	<i>10</i> 12 15 17.1 20 cpi	
	Pitch (ML / Pacemark)	<i>10</i> 12 15 17.1 20 cpi	Proportional spacing is a separate menu item in the ML/Pacemark menu.
	Style	<i>Normal</i> Italics	
	Size	<i>Single</i> Double	Double is double width and height
Symbol Sets	Character Set	<i>Set I</i> Set II	These are standard IBM character sets.
	Language Set	<i>American</i>	French German British Danish I Swedish Italian Spanish I Japanese Norwegian Danish II Spanish II Latin American French Canadian Dutch Publisher

These sets contain special characters used in foreign languages. The Publisher set includes special printing symbols.			
	Zero Character	Slashed Unslashed	Use slashed zero to distinguish from the capital letter O.
	Code Page	USA Canada French Multilingual Portugal Norway	Matches the character set to the computer display character set. Refer to a DOS manual.

The next three groups set parameters for each of the paper paths independently. When changing from one path to another the parameters also automatically change.

Group	Item	Setting	Notes
Rear Feed	Line Spacing	6 8 LPI	Sets the distance between line in lines per inch.
	Form Tear Off	OFF 500 mS 1 sec 2 sec	Activate the form tear off feature by selecting a time for the printer to wait after data before advancing the page to tear-off. If the software pauses during printing print registration may be disrupted. Select a longer time or deactivate this feature. Refer to the Printer Handbook.
	Skip Over Perforation	No Yes	When set to YES the printer advances the paper 1 inch (when reaching the bottom of the page) to the next top of form. Use ONLY for unformatted listings or programs that don't format the page.

	Page Width	13.6" 8"	The 8" setting emulates a narrow carriage printer. If 8.5" paper is always used choose this setting to prevent printing on the platen.
	Page Length	11" 11 2/3" 12" 14" 17" 3" 3.5" 4" 5.5" 6" 7" 8" 8.5"	

Group	Item	Setting	Notes
Bottom Feed	Line Spacing	6 8 LPI	Sets the distance between line in lines per inch.
	Form Tear Off	OFF 500 mS 1 sec 2 sec	Activate the form tear off feature by selecting a time for the printer to wait after data before advancing the page to tear-off. If the software pauses during printing print registration may be disrupted. Select a longer time or deactivate this feature. Refer to the Printer Handbook.
	Skip Over Perforation	No Yes	When set to YES the printer advances the paper 1 inch (when reaching the bottom of the page) to the next top of form. Use ONLY for unformatted listings or programs that don't format the page.
	Page Width	13.6" 8"	The 8" setting emulates a narrow carriage printer. If 8.5" paper is always used choose this setting to prevent printing on the platen.

	Page Length	11" 11 2/3" 12" 14" 17" 3" 3.5" 4" 5.5" 6" 7" 8" 8.5"	
--	-------------	--	--

Group	Item	Setting	Notes
Top Feed	Line Spacing	6 8 LPI	Sets the distance between line in lines per inch.
	Skip Over Perforation	No Yes	When set to YES the printer advances the paper 1 inch (when reaching the bottom of the page) to the next top of form. Use ONLY for unformatted listings or programs that don't format the page.
	Page Width	13.6" 8"	The 8" setting emulates a narrow carriage printer. If 8.5" paper is always used choose this setting to prevent printing on the platen.
	Page Length	11" 11 2/3" 12" 14" 17" 3" 3.5" 4" 5.5" 6" 7" 8" 8.5"	

Group	Item	Setting	Notes
Set-Up	Graphics	Bi-directional Unidirectional	Bi-directional prints from left to right then right to left. It is faster but may cause registration problems. Unidirectional prints from left to right ONLY. It is more precise but slower.
	Max. Receive Buffer	1 Line 4K 16K 28K	Specifies the amount of the printer's buffer used to store data.

	Paper Out Override	No Yes	A sensor stops printing about 1 inch from the bottom of a single page. Changing this setting to YES allows printing to occur closer to the bottom edge of the paper.
	Print Registration	0.25 mm Right	0.20 mm Right
0.15 mm Right	0.10 mm Right	0.05 mm Right	0.00 mm
0.05 mm Left	0.10 mm Left	0.15 mm Left	0.20 mm Left
0.25 mm Left	Adjusts the vertical registration in graphics. The best setting may vary from one software package to another.		

Group	Item	Setting	Notes
Set-Up (continued)	Operator Panel Function	Full Operation Limited Operation	Changing this setting to Limited Operation deactivates the menu mode and these control panel buttons: TOP OF FORM MICRO FEED UP/DOWN PRINT QUALITY and PITCH. This is used in situations where several people are using the printer. To restore to full operation power OFF the printer. Press and hold PRINT QUALITY and PITCH while powering ON the printer. The printer will be in Menu Mode. Change this setting to FULL OPERATION.
	Reset Inhibit	No Yes	Changing this to Yes prevents a reset signal from the computer from resetting the printer to its defaults.

	Print Suppress Effective	Yes No	Determines whether the DC3 code causes the printer to ignore data until a DC1 code is received.
	Auto LF	No Yes	
	Auto CR (IBM only)	No Yes	
	CSF Bin Select	Bin 1 Bin 2	Only available when the dual bin cut sheet feeder (CSF 3002) is installed. Determines which bin is active.
	SI Select Pitch (10 cpi - IBM ONLY)	17.1 15 cpi	Sets the pitch of condensed mode from 10 cpi using the SI code.
	SI Select Pitch (12 cpi - IBM ONLY)	20 12 cpi	Sets the pitch of condensed mode from 12 cpi using the SI code.
	Time Out Print (Epson/IBM)	Valid Invalid	When set to Valid contents of the buffer will print when additional data is not received for a predetermined amount of time.
	Auto Select	No Yes	
	Sensor Disable	No Yes	

Group	Item	Setting	Notes
Parallel I/F	I-Prime	Buffer Print Line End Invalid	Buffer Print = I-Prime makes printer print contents of buffer. Line End = I-Prime makes printer print to the end of the current line. Invalid = I-Prime the signal is ignored.
	Pin 18	+5 0 V	Determines whether voltage is supplied to pin 18.

	Auto Feed XT (Epson / IBM)	Invalid Valid	Epson Emulation Some interface cables are wired so that the XT signal always causes an automatic line feed. The <i>Invalid</i> setting eliminates this. Use the <i>Valid</i> setting if the system uses the XT signal for automatic line feed.
Serial I/F	Parity	None Odd Even	
	Serial Data 7 or 8 Bits	8 Bits 7 Bits	
	Protocol	Ready/Busy X-ON/X-OFF	
	Diagnostic Test	No Yes	Set to Yes to run the serial interface diagnostic test. To restore to full operation power OFF the printer. Press and hold PRINT QUALITY and PITCH and power ON the printer. This will place the printer in Menu Mode. Then change this setting to NO for normal operation.
	Busy Line	SSD- SSD+ DTR RTS	
	Baud Rate	19200 9600 4800 2400 1200 600 300 bps	
	DSR Signal	Valid Invalid	
	DTR Signal	Ready on Power Up	Ready on Select
	Busy Time	200 mS 1 sec	



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3.3.05 Top Of Form

General Information

The Top of Form is the place on the page where printing starts.

When the printer advances to the next page, it stops at the top of form.

The Pacemark 3410 can store a different top of form position for the three standard paper feed paths (top, rear, and bottom).

Setting Top of Form

The same procedure is used for all three paper paths.

1. Load paper into the printer by pressing FORM FEED.
2. Set the Top of Form position.

The red line on the plastic ribbon shield marks the base of the printing line. Use this as your guide when setting the Top of Form.

To increase the space between the top edge of the paper and the print start position (advance the paper), press and hold TOP OF FORM while pressing MICRO FEED up.

To decrease the space between the top edge of the paper and the print start position (retract the paper), press and hold TOP OF FORM while pressing MICRO FEED down.

3. Release TOP OF FORM. The position you set in Step 2 is registered in the printers memory.

Reset Top of Form and Menu to Factory Defaults

To reset the Top of Form and the Menu to Factory Defaults, follow this procedure.

1. Before resetting the Menu, Okidata STRONGLY RECOMMENDS printing the Menu.

Printing the Menu provides a reference of customized settings.

When the Menu is reset, all customized setting are LOST.

2. Power OFF the printer.
 3. Press and hold SELECT and TOP OF FORM while powering ON the printer.
-